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June 9, 1998

U.S. Environmental Protection Agency Emergency Response Office 75 Hawthorne Street San Francisco, California 94105

Attention: K. Nelson, Project Officer

Subject: Waste Disposal, Incorporated Tank Assessment

In March 1998, the United States Environmental Protection Agency (EPA) requested assistance from Ecology and Environment, Inc.'s Superfund Technical Assessment and Response Team (START) for the evaluation of underground structures identified at the former Waste Disposal, Incorporated (WDI) site in Santa Fe Springs, Los Angeles County, California. WDI is a National Priorities List site that is currently under investigation by EPA's Emergency Response Team (ERT)

WDI is located on a large block of partially-developed land bordered by Greenleaf Avenue, Ann Street, Santa Fe Springs Road, and Los Nietos Road (Figure 1). The underground structures of concern for this report are located on the southwestern corner of WDI, in an area known as the Campbell property.

Based on historical information, ERT determined that up to 9 septic tanks with associated dry wells, and one underground fuel storage tank were potentially present on the Campbell property.

START's role in this investigation was to assist ERT by arranging analytical services and collecting appropriate samples, under proper EPA quality assurance protocols, from these underground structures to determine their environmental hazard and danger to the public. ERT will be responsible for the interpretation of the resultant analytical data. Prior to sampling, START and ERT determined the appropriate analytical parameters to be investigated in these underground structures, via telephone conversations and START visits to the Campbell property site. The analytical parameters investigated included:

- Pesticides/polychlorinated biphenyls (PCBs) by EPA Method 8080
- Volatile organic compounds (VOCs) by EPA Method 8260A
- Semivolatile organic compounds (SVOCs) by EPA Method 8270
- Total cyanide by EPA Method 9010
- Total petroleum hydrocarbons (TPH) as gasoline and diesel, by modified EPA Method 8015
- 17 California metals by EPA 6000- and 7000-series methods.

Originally, 13 EPA Priority Pollutant metals were to be investigated. Upon ERT discussions with representatives of the city of Santa Fe Springs, the 17 metals regulated by California hazardous waste regulations were determined to be the proper suite for the best investigation of metals in the underground structures.

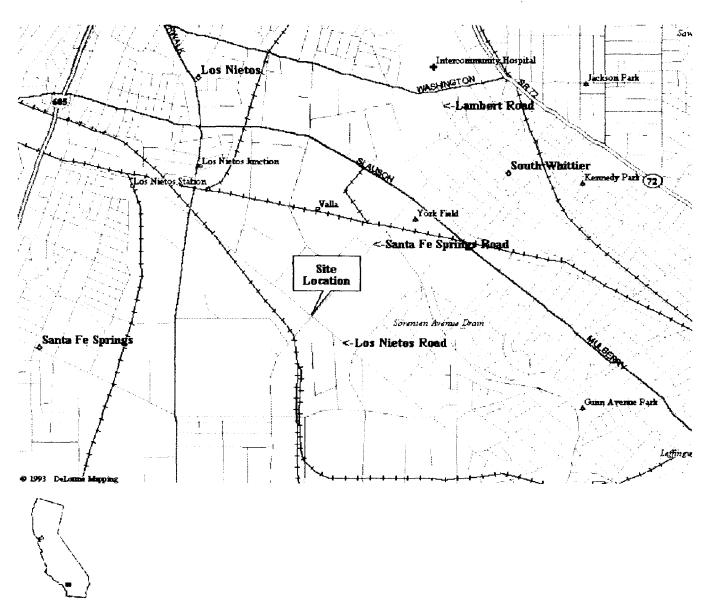


Figure 1
Site Location Map
WDI, Inc.
Santa Fe Springs, California

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Prior to the sampling, START prepared a Quality Assurance Sampling Plan (QASP) to ensure proper quality assurance procedures were followed in the field (Attachment A).

During the period March 23 through April 6, 1998, ERT utilized a backhoe and historical information to uncover a total of three dual-chambered concrete septic tanks with associated dry wells; one four-chambered concrete sump; one single-chambered concrete sump; and one underground fuel tank. ERT was unable to identify the additional septic tanks which were referenced in historical records. Of the three brick-lined dry wells associated with the identified dual-chambered septic tanks, two had been filled in at some earlier date.

On April 6, 1998, START met with ERT at the site to conduct the sampling. A total of 13 sampling locations were designated by ERT: both chambers of each of three septic tanks, one dry well associated with the northern-most septic tank, each chamber of the four-chambered sump or clarifier, one single-chambered concrete sump, and the underground fuel tank (see Table 1). START collected the samples the same day, following procedures in the QASP and under requirements of a site-specific health and safety plan. In addition, START collected one blind duplicate sample, one background sample, and one equipment blank sample, and submitted two trip blanks with the sample coolers shipped to the laboratory. A schematic of sampling locations is provided in Figure 2.

START utilized the analytical services of Sound Analytical Services, Inc., of Tacoma, Washington for sample analysis. The samples were received and analyzed within the holding time requirements designated in the QASP. Initial, unvalidated data sheets were provided to ERT immediately upon receipt by START. A data validation was subsequently conducted by a START chemist in accordance with the guidelines presented in the EPA document, "Quality Assurance/Quality Control Guidance for Removal Activities; Sampling QA/QC Plan and Data Validation Procedures." START-validated data sheets, appended to data validation summaries, are provided in Attachment B. All raw data generated by the laboratory will be maintained in START files.

The data indicated detectable concentrations of chlorinated pesticides in most of the samples, and detectable concentrations of PCBs in three of the samples. TPH detections were typically in the diesel range, at concentrations up to a maximum of 650 parts per million in sample ST-4A. Detectable and significant concentrations of metals were identified in most of the samples, but the background sample also contained significant concentrations of nine metals, including lead, chromium, and zinc. Low parts-per-billion-range VOCs were detected in most of the samples, but mainly in sample ST-4A. Higher molecular weight SVOCs were detected in all samples except ST-1B. Cyanide was not found in any of the samples investigated for this parameter.

Based on the data generated in this investigation, ERT will determine proper closure actions for the underground structures on the WDI Campbell property.

If you have any questions or comments regarding this investigation report, please contact me at 562/435-6188.

Sincergly

Michael Schwennesen START Team Member

START Team Member

Attachments

cc:

file

C. Weden, FOSC

Table 1 START Sampling Locations, WDI Campbell Property				
Sample Number	Location/Matrix Description	Analytical Parameters		
ST-1A	Southern-most septic tank, western chamber, which contained a single-phase wet, rocky soil.	VOCs Pesticides/PCBs CA metals SVOCs TPH		
ST-1B	Southern-most septic tank, eastern chamber, which contained a single-phase wet, rocky soil.	VOCs Pesticides/PCBs CA metals SVOCs		
ST-2A	Northeast septic tank, southern chamber, which contained a single-phase wet, rocky soil.	VOCs Pesticides/PCBs CA metals SVOCs TPH		
ST-2B	Northeast septic tank, northern chamber, which contained a single-phase wet, rocky soil.	VOCs Pesticides/PCBs CA metals SVOCs		
ST-3A	Southern-most chamber of a four-chambered sump or clarifier, containing a single liquid phase.	Total cyanide VOCs Pesticides/PCBs CA metals TPH		
ST-3B	Second chamber of a four-chambered sump or clarifier, containing a single liquid phase.	Total cyanide VOCs Pesticides/PCBs CA metals TPH		
ST-3C	Third chamber of a four-chambered sump or clarifier, containing a single liquid phase.	Total cyanide VOCs Pesticides/PCBs CA metals TPH		
ST-3D	Northern-most, fourth chamber of a four-chambered sump or clarifier, containing a single liquid phase.	Total cyanide VOCs Pesticides/PCBs CA metals TPH		

	Table 1 START Sampling Locations, WDI Campbell Property	
Sample Number	Location/Matrix Description	Analytical Parameters
ST-3E	Blind duplicate of ST-3B	Total cyanide VOCs Pesticides/PCBs CA metals TPH
ST-4A	Northwest septic tank, southern chamber, which contained a single-phase wet, rocky soil	VOCs Pesticides/PCBs CA metals SVOCs TPH
ST-4B	Northwest septic tank, northern chamber, which contained a single-phase wet, rocky soil	VOCs Pesticides/PCBs CA metals SVOCs
DW-1	Dry well to the north of ST-4B, which contained a dry soil. Sample collected from approximately 20 feet below the top of the brick liner.	VOCs Pesticides/PCBs CA metals SVOCs TPH
ST-5	Single chambered concrete sump near the eastern edge of the Campbell property, which contained a single-phase wet sludge.	VOCs Pesticides/PCBs CA metals SVOCs TPH
UST-1	Apparent underground fuel tank located below a concrete foundation southwest of the ST-3 sumps, which contained a single-phase liquid.	VOCs Pesticides/PCBs CA metals TPH
BKG-1	Background sample from northeast fence line of Campbell property, which contained a single-phase dry soil.	VOCs Pesticides/PCBs CA metals SVOCs TPH
EB-1	Equipment blank	VOCs Pesticides/PCBs CA metals TPH
TB-1, TB-2	Trip blanks for two shipping coolers.	VOCs

BKG-1 DW-1 O ST-4B O ST-4A ST-2B ST-2A ST-3D ST-3C ST-3B ST-3A UST-1 ST-5 ST-1A, ST-1B not to scale

Los Nietos Road

Figure 2
Schematic of Sample Locations
Campbell Property
WDI, Inc.

ATTACHMENT A QUALITY ASSURANCE SAMPLING PLAN

QUALITY ASSURANCE/QUALITY CONTROL SAMPLING PLAN (QASP)

WDI Tank Assessment Santa Fe Springs, California

March 30, 1998

EPA Project No.: KJ9103 Contractor Work Order No.: 09-9803-006 EPA Contract No.: 68-W6-0010

Approvals:		
Howard Edwards START Quality Assurance Officer	Date	
Chris Weden EPA Task Monitor	Date	

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WDI Tank Assessment QASP TDD#: 09-9803-006 March 30, 1998

1.0 BACKGROUND

The former Waste Disposal, Inc. (WDI) property is located on a large block of partially-developed land bordered by Greenleaf Avenue, Ann Street, Santa Fe Springs Road, and Los Nietos Road in Santa Fe Springs, Los Angeles County, California. This Quality Assurance Sampling Plan (QASP) involves environmental sampling at the southeast corner of the block, known as the Campbell property, and bordered by Los Nietos Road and Greenleaf Avenue (Figure 1, Site Location Map).

The Campbell property contains approximately 25 concrete foundations, which were previously foundations for "Quonset" structures and which housed several small businesses. Reportedly, among these defunct businesses were metal finishing and automobile repair shops.

The U.S. Environmental Protection Agency's Emergency Response Team (ERT) has been tasked to conduct an assessment of the site, and will utilize the Superfund Technical Assessment and Response Team (START) for sampling logistics and analytical laboratory acquisition.

Based on historical information, ERT expects to locate and sample up to 9 septic tanks with associated dry wells, and one potential underground fuel storage tank. In addition, sampling may be conducted at any trenches or spreading grounds which may be found in the process of the investigation.

Proposed Site Work:

START will collect samples at locations designated by ERT, using EPA-promulgated quality assurance procedures. The resulting data will be validated and then provided to ERT, which will be responsible for the evaluation of the data.

2.0 DATA USE OBJECTIVES

The data generated by this investigation is expected to be of sufficient quality to provide information regarding contamination levels and assist in providing information for subsequent remediation scenarios at the sampled locations. The data will also provide ERT with sufficient information to satisfy the City of Santa Fe Springs in its requirements for the proper closure of the sampled underground tanks/structures.

3.0 QUALITY ASSURANCE (QA) OBJECTIVES

In order to fulfill the objectives in Section 2.0, all confirmation sample analyses will be performed by definitive methods and will include the receipt of Level IV-type data validation packages.

The quality assurance objectives for this assessment, as determined by the requirements stated in "Data Quality Objectives Process for Superfund" Interim Final Guidance, September, 1993, EPA/540/G-93/071, Publication No. 9355.9-01, are listed in the table below:

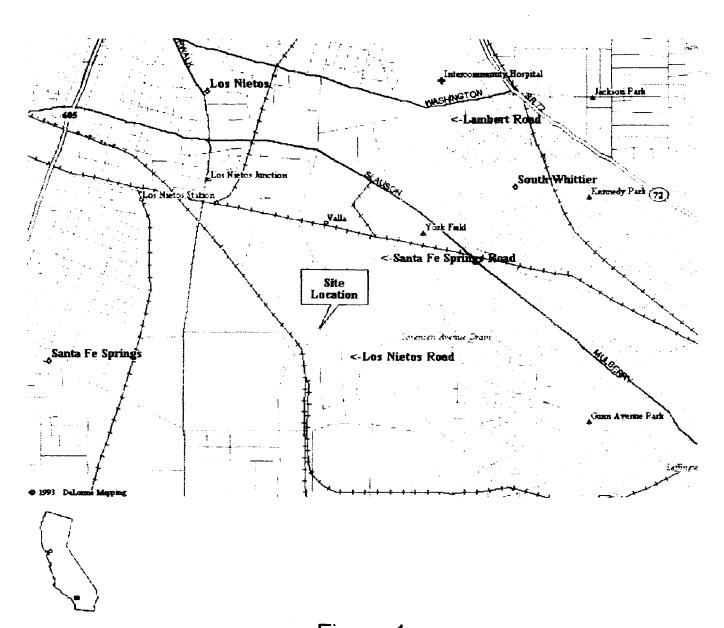


Figure 1
Site Location Map
WDI, Inc.
Santa Fe Springs, California

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Table 1
Quality Assurance Objectives

Parameter	Matrix	Data Use	QA Objective
Volatile Organic Compounds, EPA Method 8260A	solid/liquid	Site Characterization	Definitive
Semivolatile Organic Compounds, EPA Method 8270	solid	Site Characterization	Definitive
Total Petroleum Hydrocarbons, EPA modified Method 8015	solid/liquid	Site Characterization	Definitive
Pesticides/PCBs EPA Method 8080	solid	Site Characterization	Definitive
California Metals, EPA 6,000- and 7,000-series methods	solid	Site Characterization	Definitive
Total and Reactive Cyanide, EPA Method 9010	solid/liquid	Site Characterization	Definitive

4.0 SAMPLING METHODS AND PROCEDURES

4.1 Septic Tank Sampling

Soil from backfilled septic tanks will be collected via a hand auger or slam bar corer device equipped with brass or stainless steel sleeves. Hand auger soil samples will be immediately placed in an eight-ounce glass jar, using a dedicated sampling spoon. Corer sleeve samples will be capped with Teflon sheeting and end caps. Sample jars and/or corer sleeves will be prepared for shipment to the analytical laboratory by:

- Taping the cap(s) with an appropriate (non-volatiles-generating) tape;
- Emplacing a sample label with appropriate information (Section 5.4);
- Emplacing a custody seal;
- Placing the sample in a sealed "baggie;"
- Storing the sample on ice.

Liquid or sludge found in any septic tank will be sampled by a ladle or sampling bomb as appropriate, decanted into an eight-ounce glass jar, and prepared for shipment as for soil samples.

4.2 Dry Well Sampling

Dry well sampling will be accomplished in the same manner as soil samples collected from septic tanks. Hand auger or corer rod extensions may be required to reach an appropriate depth of a dry well.

4.3 Underground Fuel Storage Tank Sampling

The underground storage tank is located beneath a concrete pad, which has a square hole cut in it to provide access to the contents of the tank. Preliminary site observations indicate that this tank is filled with water, and has settled debris on the bottom.

A liquid sample will be collected from this tank by disposable bailer, by drum thief, or by direct immersion of the sample container(s) into the water phase of the tank. The sample container(s) will then be prepared for shipment as described in Section 4.1.

An attempt will be made to sample sludge and/or debris from the bottom of the tank using a ladle-type device. If successful, the sample will be placed in an eight-ounce glass jar and prepared for shipment as described in Section 4.1.

4.4 Uncovered Trench and Spreading Ground Sampling

If trenches or spreading grounds are uncovered in the course of the investigation, these areas will be sampled by hand auger or slam bar corer as described in Section 4.1.

4.5 Sample Containers, Sample Volumes, Preservatives and Holding Times

Table 2 lists the required sample containers, sample volumes, preservation and holding times for individual analyses.

Table 2
Analytical Methods, Required Sample Containers, and Preservatives

Analytical Method	Sample Containers	Required Volume	Preservation	Holding Times
Liquid Volatile Organic Compounds EPA 8260A	40 ml VOA, no headspace, glass container, Teflon septa	Sample- 3x 40 ml MS/MSD- 4x40 ml	Store on ice Protect from light, preserve with HCl to pH<2	14 days
Liquid TPH EPA 8015 (modified)	as above	as above	Store on ice	14 days
Liquid Total Cyanide EPA 9010	1-liter polyethylene bottle	Sample- 1x 1 liter MS/MSD- 3x 1 liter	Store on ice, NaOH to pH >12	14 days
Solid TPH EPA 8015 (modified)	as above	as above	Store on ice	14 days
Solid Pesticides/PCBs EPA 8080	6" stainless steel or brass sleeve; or 8 oz. glass jar	1 sleeve or jar for sample/MS/MSD	Store on ice	7 days to extract; 40 days to analyze

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Solid Volatile Organic Compounds EPA 8260	6" stainless steel or brass sleeve; or 8 oz. glass jar	1 sleeve or jar for sample/MS/MSD	Store on ice	14
Solid California Metals EPA 6,000 and 7,000 series	6" stainless steel or brass sleeve; or 8 oz. glass jar	l sleeve or jar for sample/MS/MSD	Store on ice	6 months 28 days (Hg)
Solid Semivolatile Organic Compounds EPA 8270	6" stainless steel or brass sleeve; or 8 oz. glass jar	I sleeve or jar for sample/MS/MSD	Store on ice	7 days to extract; 40 days to analyze

4.6 Decontamination Procedures

START will ensure that any non-dedicated field sampling equipment is properly decontaminated by washing in a phosphate-free detergent solution, and subsequent rinsing with potable water and deionized water.

4.7 Disposal of Investigation-Derived Waste

Any solid waste generated by START's sampling activities will be properly disposed of, either in receptacles for municipal trash (paper, label backings, tape, etc.) or in properly labeled drums of investigation-derived waste (PPE, rags or towels, etc.) which will be left on the site for later determination of the proper disposal option.

Decontamination water may be placed in a properly labeled drum and left on site, or, if only a small amount, the water may be allowed to evaporate in the decontamination vessels on site.

5.0 SAMPLE DOCUMENTATION AND SHIPMENT

All sample documents will be completed legibly in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing the error.

5.1 Field Logbooks

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries and will include the following:

- 1. Site name and project number.
- 2. Names of personnel on-site.
- 3. Dates and times of all entries (military time preferred).
- 4. Descriptions of all site activities, including site entry and exit times.
- 5. Noteworthy events and discussions.
- 6. Weather conditions.
- 7. Site observations.
- 8. Identification and description of samples and locations.
- 9. Date and time of sample collections, along with chain of custody information.

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- Record of photographs.
- 11. Site sketches.

5.2 Sample Numbering and Identification

Samples will be identified with a unique sample location number (e.g., DW-1 "Dry Well 1"), followed by a six-digit date and a two-digit depth, if applicable. For example, DW-1-040298-15 would indicate a sample from Dry Well #1, collected on April 2nd, from a 15-foot depth. Trip blanks will be identified by the letters "TB," and date. Equipment blanks will be identified by the letters "EB," and date.

5.3 Sample Labels, Chain of Custody Records, Custody Seals

Sample Labels

Sample labels will clearly identify the particular sample and will include the following, written in indelible ink:

- 1. Site name and number.
- 2. Time and date sample was collected.
- 3. Sample preservation.
- 4. Analysis requested.
- 5. Sampler Name.

Sample labels will be securely affixed to the sample container.

Chain of Custody Record

A Chain of Custody record will be maintained from the time the sample is collected, to its final deposition. Every transfer of custody will be noted and signed for, and a copy of this record maintained by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they will be stored in a locked container sealed with a custody seal. The Chain-of-Custody record will include (at a minimum) the following:

- 1. Sample identification number.
- 2. Sample information.
- 3. Sample location.
- 4. Sample date.
- 5. Names(s) and signature(s) of sampler(s).
- 6. Signature(s) of any individual(s) with control over samples.

Custody Seals

Custody seals demonstrate that a sample container has not been tampered with, or opened. The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal.

5.4 Sample Handling and Shipment

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Samples will be collected in the sample containers outlined in Table 2 and will be labeled and sealed in accordance to the protocol described in Section 4.1. Each sample collected will have the label affixed directly onto the container with a custody seal placed over or around the container cap. Upon collection, samples will be placed on ice.

After chilling, samples collected in glass containers will be wrapped with bubble wrap, sealed in plastic bags and placed in metal or plastic coolers chilled with double bagged ice, or blue ice. Samples for volatile organic analysis will be kept separate from other samples. After proper packaging, the Chain of Custody form will be placed in a plastic bag and affixed to the inside lid of the cooler. The cooler will then be sealed with tape and a minimum of three custody seals. An overnight air bill will be affixed to the cover of the cooler for immediate overnight shipment by Federal Express or other carrier.

5.5 Tentative Schedule of Activities

The following is a preliminary outline of proposed work activities. These dates may be subject to change based PRP activities:

Activity	Proposed Start Date	Expected End Date
Soil/Liquid/Sludge Sample Collection	04/01/98	04/01/98

6.0 ANALYTICAL METHODS AND PROCEDURES

6.1 Analytical Methods and Required Detection Limits

The analytical methods are presented in Table 1. Detection limits will be those generated by the analytical laboratory under the requirements of each specific EPA method. Samples will be prepared, analyzed, confirmed, documented, and reported as specified in each EPA method. The use of other analytical methods will not be acceptable for this work without prior authorization from the EPA Task Monitor and the START Project Manager.

6.2 Quality Control Samples

6.2.1 Field Duplicates

Field duplicates will be submitted for 10 percent of samples collected during each sampling event. If fewer than ten samples for a parameter are collected, one field duplicate will be collected and submitted. The PM will designate which samples will be the field duplicates. These samples will be assigned individual sample numbers as outlined in Section 5.0 and submitted blind to the laboratory.

6.2.2 Blank Samples

A minimum of one field blank and/or equipment blank sample will be submitted for analysis for each day of sampling. The blank sample will be collected utilizing distilled water. The water will be submitted to the lab as a regular blind sample, using a fabricated sample designation.

6.2.3 Matrix Spike and Matrix Spike Duplicate (MS/MSD) Samples

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Samples designated for MS/MSD will be submitted for 10 percent of samples collected during each sampling event. If fewer than ten samples for a parameter are collected, one sample for MS/MSD will be collected and submitted. The PM will designate which samples will be submitted as MS/MSDs. These samples will be assigned a sample number indicating location. MS/MSD will be added to the label and Chain of Custody form.

6.2.4 Trip Blanks

One trip blank will be carried into the field with the sample containers, and will be submitted to the laboratory with each set of samples being submitted for volatile organic compound analyses.

6.2.5 Background Sample

One background sample will be collected from an area appearing to reflect uncontaminated conditions. Such an area will likely be on a border of the property, near one of the adjacent roads.

6.3 Laboratory QC Sample Requirements

An outline of the type and frequency of laboratory QC check samples are presented in Table 3 along with Data Quality Objectives (DQOs) where applicable.

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Table 3
Quality Control Samples and DQOs

QC Sample	Number/Frequency	DQO	Comments/Exceptions
Method Blank (MB)	1 per SDG*, per matrix, per method, per day	"Not Detect" for the analytical suite	
Matrix Spike	1 per SDG, per matrix, per method	75-125% Recovery	
Matrix Spike Duplicate	1 per SDG, per matrix, per method	≤25% RPD for organics	
Reference Standards	1 per SDG, per matrix, per method		
Internal Standards	All samples		All GC/ MS and some GC analyses only
Laboratory Control Standards	1 per SDG, per matrix, per method	75 - 125% Recovery	Per method for organic analyses

^{*}SDG - Samples Delivery Group (Maximum 10 samples)

RPD - Relative Percent Difference

7.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

7.1 QA/QC Requirements

The following general QA/QC requirements apply to the QA objectives and parameters identified in Section 2.0. In addition to the general QA/QC protocol, method-specific QA/QC requirements for sample analyses are to be achieved by the laboratory.

The following QA protocols for definitive data are applicable to all sample matrices specified in this QASP and include:

- 1. Sample documentation in the form of field logbooks, field data sheets, and chain of custody forms;
- 2. Instrument initial and continuing calibration and performance check procedures/methods will be summarized and documented in the instrument logbook;
- 3. Detection limit will be determined and recorded together with data as appropriate;
- 4. Analyte identification and quantification;
- 5. QC blanks will be analyzed;
- 6. Matrix spike recoveries will be documented;
- 7. Analytical error determination (measures precision of analytical method); and
- 8. Total measurement error determination (measures overall precision of the measurement system from sample acquisition through analysis).

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The type and frequency of laboratory QC checks are listed in Table 3, which also summarizes data quality objectives (duplicate precision and percent recovery). Table 1 includes the method number, required analyte and method detection limits for each method.

7.2 Turnaround Time

Preliminary data summaries for soil and groundwater sample analyses are requested on a standard 14-day turnaround basis by fax or computer e-mail. A hard copy of this information is also requested on a standard turnaround basis. A full data validation package is requested 30 days from the analysis of samples.

7.3 Deliverable Packages

The data package for definitive level data shall include all original documentation generated in support of this analytical project. In addition, the laboratory shall provide original documentation to ensure that all requirements of the methods have been met. This includes but is not limited to, sample tags, custody records, shipping information, sample preparation/extraction records and instrument printouts such as mass spectra. When information and documentation required in this document or required method records are in permanently bound notebooks and computer files, copies of the appropriate information are acceptable.

The following deliverables are required for definitive data. Note that the following data requirements are included to specify and emphasize general documentation requirements and are not intended to supersede or change requirements of each method.

- Copies of the original sample packing list, chain of custody, and sample log-in records.
- A case narrative describing the analyses and methods used, the criteria used to qualitatively identify Tentatively Identified Compounds (TICs), and discussing the presence of any interferences and failure of the lab to meet any of the requirements or reanalyses.
- Analytical data (results) up to three significant figures for all samples, method blanks, MS/MSDs, LCS, duplicates, Performance Evaluation (PE) samples, and field QC samples.
- QC Summary sheets: EPA CLP-equivalent forms which summarize the following:

Organics/Inorganics

- 1. MS/MSD/LCS recovery summary
- 2. Method/preparation blank summary
- Initial and continuing calibration summary (including retention time windows)
- 4. Sample holding time and analytical sequence (i.e., extraction analysis)
- 5. Calibration curves and correlation coefficients
- 6. Duplicate summary
- 7. Detection limit information
- 8. Analyst bench records describing dilution, weighing of samples, percent moisture (solids), sample size, sample extraction and cleanup, final extract volumes and amount injected
- 9. Detailed explanation of the quantitation and identification procedure used, giving examples of calculations from raw data
- 10. The final deliverable report will consist of sequentially numbered pages.

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Additional requirements for organics:

- 1. Internal/surrogate recoveries
- 2. GC/MS tuning conditions summary
- 3. Reconstructed ion current chromatogram and quantitation reports for all samples, standards, blanks, MS/MSD and PE samples.
- 4. For every compound identified in each field sample, provide raw versus enhanced spectra and enhanced versus reference spectra
- 5. For target analytes, the reference spectrum shall be the check standard for that sample. For TICs, the reference mass spectrum shall be the best fit spectrum from a search of the spectral library.
- 6. Confirmation analysis data second column confirmation required for all TICs (GC analyses such as chlorinated pesticides and PCBs). Provide all associated raw data and summary sheets for the confirmation analyses.

All sample results, including QA/QC sample results shall also be provided to the START on a 3.5" disk in any of the following formats: fixed-width ASCII (space delimited ASCII), Lotus 1-2-3 or Approach, Microsoft Excel or Access, or Paradox. The following should be provided in <u>separate fields</u>:

- START sample number
- Laboratory sample number
- Sample matrix
- Analyte
- Result
- Oualifier
- Detection or quantitation limit
- Units
- Analytical method, and
- Date analyzed.

All analyses for unique sample delivery groups should be analyzed in uninterrupted batches on a single instrument except for required QC sample analyses. Preparation batches should include the same sample as instrument batches. If specific groups have not been identified on the chain of custody form, the laboratory may assemble the samples into groups at its own discretion.

7.4 Data Review/Validation Requirements

Data Validation of Definitive Data Packages

Data validation will be conducted by a START chemist in accordance with the guidelines presented in the EPA document "Quality Assurance/Quality Control Guidance for Removal Activities; Sampling QA/QC Plan and Data Validation Procedures."

Specific validation activities include the following:

1. The samples will be evaluated for holding times, field blank contamination, matrix spike recovery for the sample lot, analyte identification and quantitation and surrogate recovery.

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- 2. The analytical system will be evaluated for precision, accuracy and overall function through evaluation of initial and continuing calibrations, instrument blanks, method blanks, blank spikes, PE samples, interference check samples and detection limits.
- 3. The data package will be evaluated for completeness, chain of custody, laboratory comments and perceived problems.

8.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

EPA Regional Project Manager Andrea Benner, in conjunction with ERT project manager Bill Coakley, will provide overall direction to the Ecology & Environment, Inc. START staff concerning project needs, objectives and schedule. The START project manager, Michael Schwennesen, will be the primary point of contact for START field activities. Mr. Schwennesen will oversee and direct the sampling activities specified in this QASP. The START project manager will be responsible for the development and completion of the QASP, project team organization, and supervision of all project tasks, including reporting and deliverables. The START Site QC Coordinator, Howard Edwards, will be responsible for ensuring field adherence to the Sampling QASP and recording any deviations. The site QC coordinator is also the primary project team contact with the lab.

Personnel

Michael Schwennesen QA/QC Coordinator Judy Sapp Responsibility

Project Manager Howard Edwards Field Technical Assistant

Analytical services will be provided by:

Sound Analytical Services, Inc. 4813 Pacific Highway East Tacoma, WA 98424 (253) 922-2310

9.0 DELIVERABLES

The START Project Manager will maintain contact with the ERT project manager, and will keep him informed concerning the technical and financial progress of the project. Activities under this project will be reported in verbal and written status reports and other deliverables, such as analytical and final reports. Activities will also be summarized in appropriate format for inclusion in monthly and annual reports.

The following deliverables will be provided under this project:

Ouality Assurance Sampling Plan

This document is meant to fulfill this requirement.

Data Validation Report

A review of the data generated under this plan will be performed by START, and appended to the analytical

WDI Tank Assessment QASP TDD#: 09-9803-006 March 30, 1998

data package. The START data validation report will be prepared detailing analytical methods or procedures employed, sample results, QA/QC results, chain of custody documentation, laboratory correspondence, and raw data.

Final Report

A final report will be prepared to correlate available background information with data generated under this sampling project and identify supportable conclusions and recommendations which satisfy the objectives of this sampling QA/QC plan. A draft report will be submitted before the final report if so requested by the ERT project manager. The date and time for submittal of this report will be determined in the future by the ERT project manager.

ATTACHMENT B DATA VALIDATION REPORTS



May 20, 1998 Project No. 201423-01

Ecology & Environment 11 Golden Shore, Suite 340 Long Beach, California 90802

Attention:

Mr. Mike Schwennesen

Subject:

Revised Data Validation WDI Tank Assessment Santa Fe Springs, California TDD No. 09-9803-0006 PAN No. 0294-WDSF-XX

Dear Mr. Schwennesen:

In accordance with your request, Ninyo & Moore has performed data validation for the above referenced project site. The following reports document our review of the data, and our conclusions and qualifications. Seven validation deliverables were prepared according to "USEPA Quality Assurance/Quality control Guidance for Removal Activities" which is published by the Office of Solid Waste and Emergency Response (OSWER).

We appreciate the opportunity to be of service to you on this project. Should you have any questions, please contact the undersigned.

Sincerely.

NINYO & MOORE

Trisha J. Woolslayer

Staff Environmental Scientist

Desha J. Woodslayer

TJW/DLR/av

Distribution: (1) Addressee

David L. Richter, R.E.A.

Senior Environmental Scientist

ANALYTICAL DATA REVIEW SUMMARY

Site Name:	WDI Tank Assessment
Location:	Santa Fe Springs, California
PAN No.:	0294-WDSF-XX
TDD No.:	09-9803-0006
Laboratory:	Sound Analytical Services, Inc.
Sampling Date:	April 6, 1998
Analytical Method:	8081/8082
Sample Matrix:	Soil/water Soil/water
-	

Sample No.	Sample I.D.	Laboratory I.D.
1	ST-4A	71868-01
2	ST-4B	71868-02
3	ST-5	71868-03
4	DW-1	71868-04
5	BKG-1	71868-05
6	ST-3D	71868-07
7	ST-3E	71868-10
8	UST-1	71868-13
9	EB-1	71868-17
10	ST-1A	71868-19
11	ST-1B	71868-20
12	ST-2A	71868-21
13	ST-2B	71868-22
14	ST-3A	71868-25
15	ST-3B	71868-28
16	ST-3C	71868-31

Data Reviewer:	Trisha J. Woolslayer	Jesena J W	DOKLEYA	3/18/98
Chemist QA Reviewer:			V	
START PM Acceptance:				

GENERAL METHODS DATA VALIDATION WORKSHEET - SUMMARY

Labor Revie Revie	rt No.: ratory: wer: w Date: rtical Method:		Woolslaye 1998	ervices, Inc. r		
No. of	f Samples	Water:	7	Solid:	9	Other:
ndicat	e with a YES or	NO whether	er each ite	m is within QC	limits.	
1.	Holding Tim	es			Y	
2.	Surrogate Re				*	
3.	Matrix Spike	•	licate		*	
4.	Blanks				\overline{Y}	
5.	Initial Calibra	ation			Y	
6.	Continuing C	Calibration			Y	
7.	Endrin/DDT	Breakdowi	n		Y	
8.	Compound I	dentification	n		*	
9.	Compound (Quantitation	ļ		Y	
10.	System Perfo	ormance			*	
11.	Overall Asse	ssment			*	
			_			e used were not reported fore, data was validated

GC ORGANICS ANALYSES

DATA PACKAGE COMPLETENESS CHECKLIST

Checklist Code:	X Included: no problems
	* Included: problems noted in review
	O Not Included and/or Not Available
	NR Not Required
	RS Provided As Re-submission
X Case 1	Narrative Samuel Control of the Cont
0 " 0 1 1 0	
Quality Control S	ummary Package
X	Data Summary Sheets (Form 1)
X	Surrogate Recovery Summary (Form 2)
$\overline{}X$	Matrix Spike/Spike Duplicates (Form 3)
X	Method Blank Summaries (Form 4)
X	Pesticide Evaluation Standards Summary (Form 8)
0	Pesticide/PCB Standards Summary (Form 9)

Pesticide/PCB Identification (Form 10)

Raw QC Data Package

0

X	Instrument Chromatograms*
X	Integration Results*
X	Confirmation Analysis Results
X	Copies of all Calculations of Results
	List of Instrument Detection Limits
X	Chain-of-Custody Records
\overline{X}	Sample Preparation and Analysis Run Logs
	Other

Other _____

^{*} Results for all samples, standards, blanks, MS/MSD and PE samples may be provided.

T.	H	ΩI	DI	NG	TIN	1ES

Acceptable X Outside QC Limits	
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Samples were extracted and analyzed within the prescribed holding time, except as noted under comments. Samples extracted and/or analyzed outside holding time requirements will be flagged (J) as estimated.

Holding time:

waters: 7 days soil/sludges: 14 days extracts: 40 days

Comments:

II. I	NSTRUMENT :	PERFORMA	NCES
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Acceptable X Outside QC Limits	
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All standards must be within established Retention Time (RT) windows. RT windows should be set at \pm 3 times the standard deviation for three standard analyses over a 72 hour period. Breakdown of Endrin and 4,4'-DDT must be less than 20% for the midpoint DDT and Endrin check standard. This is determined as follows:

% Breakdown = Total DDT degradation peak area (DDD + DDE) x 100% for 4,4'-DDT Total DDT peak (DDT+DDE+DDD)

Total endrin degradation peak area

% Breakdown = (endrin aldehyde + endrin ketone) x 100% for Endrin Total endrin peak area (endrin + endrin aldehyde + endrin ketone)

The retention time for 4, 4'-DDT must be approximately 12 minutes.

If endrin and 4,4'-DDT breakdown exceeds 20%, all associated results are qualified as estimated (J). If the RT for 4,4'-DDT is significantly less than 12 minutes, the reviewer must evaluate the analyte resolution in calibration standards.

Comments:

III. INITIAL	AND	CONTINUING	CALIBRATION
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Acceptable X Outside QC Limits

Verify that a five point initial calibration and a daily continuing calibration were analyzed for pesticides and that a one point, low level initial calibration standard was analyzed for each Aroclor. Check the laboratory's calculations of Percent Relative Standard Deviation (%RSD) and verify that the %RSD <20% for all analytes. In cases where this criteria is exceeded, all associated positive results are qualified as estimated (J). Check the laboratory's calculations of the Percent Difference (%D) between the initial calibration and the continuing calibration. In cases where the value for %D exceeds ±15%, all associated data are flagged as estimated (J). In cases where the continuing calibration results are very low (%D is large and negative) associated results may be rejected ®. List all deviations and flagged results below.

Comments:

IV.	MATRIX SPIE	KE/SPIKE DUPI	ICATE R	ECOVERIES
-----	-------------	---------------	---------	------------------

Acceptable X Outside QC Limits

Matrix spike and spike duplicate recoveries should meet the laboratory QC criteria. In instances where the QC criteria are not met, the analyst should comment on whether the results appear to be due to matrix effects or some other cause. If the MS/MSD recovery was low, was a duplicate LCS provided after the MS/MSD analyses to prove that the low recovery was due to a matrix effect? List QC deviations below.

Comments:

V. SURROGATE R	ECOVERIES
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Acceptable	Outside (QC Limits	X

Tetrachloro-m-xylene (TMX) and decachlorobiphenyl (DCB) are utilized as surrogate standards. Confirm the surrogate recovery calculations for several samples. Verify that the percent recoveries are within the laboratory established limits. If surrogate recoveries exceed these limits, the associated results are qualified (J). If the surrogate was not recovered, the results are rejected (R) unless the extract required dilution.

Comments:

Surrogate recoveries for the following four samples were outside QC limits: ST-4B, UST-1, EB-1, ST-2A. This appears to be due to a matrix interference, and no data were qualified.

Several samples had surrogates which were not recovered due to dilutions.

VI.	BLANKS	

Acceptable X Outside QC Limits

Verify that a method blank was analyzed with each preparation batch of samples analyzed and that all blanks contain less than the Required Detection Limit (RDL) of any pesticide or interfering peak. Any analyte detected in the sample and also in the associated blank, must be qualified as non-detect (U) when the sample concentration is less than 5 times the blank concentration.

Comments:

II. COMPOUND IDENTIFICATION

Any positive result must be verified using second column confirmation (or more rarely, by GC/MS confirmation). If qualitative criteria for second column confirmation are not met, the data must be flagged (NJ) as presumptively present at an estimated concentration. If a sample peak is outside of the retention time window in either the initial or confirmation analysis the result is also flagged (NJ). PCBs may not require second column confirmation if good pattern recognition has been established.

Comments:

Positive results with second column confirmation RPDs greater than 40% were qualified NJ. This qualification applies to the following samples: ST-4B, ST-3D, ST-2B, and ST-3A.

VIII. COMPOUND QUANTITATION/REPORTED DETECTION LIMITS

Verify that reported values, both positives and non-detects have been correctly adjusted to reflect dilutions, concentrations and clean-up procedures.

Comments:

IX. OVERALL ASSESSMENT OF DATA

	this review, the following determination has been made wit usability for the specified level.	h regard to
Acceptable Rejected	Accepted with QualificationX	
Accepted data ERS Screenia	meet the minimum requirements for the following EPA data	ı category:
	e with 10% Conformation by Definitive Methodology	X
	prehensive Statistical Error Determination chensie Statistical error Determination	X

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments:

- The sample matrix and types of preservative used were not reported on the chainof-custody.
- CLP summary forms were not provided. Therefore, data was validated based on the raw data.
- Surrogate recoveries for the following four samples were outside QC limits: ST-4B, UST-1, EB-1, ST-2A. This appears to be due to a matrix interference, and no data were qualified. Several samples had surrogates which were not recovered due to dilutions.
- Positive results with second column confirmation RPDs greater than 40% were qualified NJ. This qualification applies to the following samples: ST-4B, ST-3D, ST-2B, and ST-3A.

ANALYTICAL DATA REVIEW

APPENDIX A

DATA VALIDATION QUALIFIERS

The following list of data validation qualifiers may be used in this data review package:

J The associated numerical value is an estimated quantity because the reported concentrations were less than the required detection limits or because quality control criteria were not met. N Presumptive evidence of presence of material. Presumptive evidence of the presence of the material at an estimated quantity. NJ The material was analyzed for, but not detected. The associated numerical U value is the sample detection limit or adjusted sample detection limit. The material was analyzed for, but not detected. The reported detection limit UJ is estimated because quality control criteria were not met. R The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable RND Recovery Not Determined (Optional). Precision Not Determined (Optional). **PND**

ANNOTATED DATA SUMMARY SHEETS

Hand-annotated copies of the Data Summary Sheets from the analytical data package follow. When appropriate, detection limits have been adjusted to reflect effects of relevant qualifications noted during the data review. Errors in the reporting of detected compound results will usually not be changed by hand. In these cases, the laboratory may be required to re-submit portions of the data package and any affected Data summary Sheets. Any additional quality control failures have been flagged using the above listed data validation qualifiers.

Pages of Annotated Data summary Sheets follow.

Client Name Ecology & Environment, Inc. Client ID: ST-4A Lab ID: 71868-01 Date Received: 4/8/98 Date Prepared: 4/15/98 Date Analyzed: 4/19/98 % Solids 83.54 **Dilution Factor** 20

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	Recovery Limits		
Surrogate	% Recovery	Flags	Low	High		
TCMX	-	X8	63	149		
Decachlorobiphenyl	-	X8	57	143		

Sample results are on a dry weight basis.

		Result			
Analyte		(ug/kg)	PQL	MDL	Flags
Aroclor 1016	ND		220	150	
Aroclor 1221		8500	440	260	C1
Aroclor 1232	ND		220	120	
Aroclor 1242	ND		220	78	
Aroclor 1248	ND		220	44	
Aroclor 1254		2500	220	71	C1
Aroclor 1260	ND		220	63	
Aldrin	ND		22	1.6	
alpha-BHC	ND		22	1.7	
beta-BHC	ND		22	3.1	
delta-BHC	ND		22	1.7	
gamma-BHC (Lindane)	ND		22	3.8	
Chlordane (technical)	ND		220	54	
4,4'-DDD	ND		44	3.8	
4,4'-DDE	ND		44	7.9	
4,4'-DDT	ND		44	28	
Dieldrin	ND		44	1.6	
Endosulfan I	ND		22	7.1	
Endosulfan II	ND		44	3.6	
Endosulfan sulfate	ND		44	5.3	
Endrin	ND		44	2.7	
Endrin aldehyde	ND		44	20	
Heptachlor	ND		22	2.2	
Heptachlor epoxide	ND		22	3.7	
Methoxychlor	ND		220	49	\a(\lambda)
Endrin ketone	ND		44	7	/ W/d8
					5/101

W

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-01 continued...

Analyte Toxaphene Result (ug/kg)

ND

PQL 2200 MDL

960

5/18/98 QW

Client Name	Ecology & Environment, Inc.
Client ID:	ST-4B
Lab ID:	71868-02
Date Received:	4/8/98
Date Prepared:	4/15/98
Date Analyzed:	4/19/98
% Solids	79.84
Dilution Factor	5

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	97		63	149
Decachlorobiphenyl	273	X9	57	143

Sample results are on a dry weight basis.

		Result				
Analyte		(ug/kg)	PQL	MDL	Flags	
Aroclor 1016	ND		58	38		
Aroclor 1221	ND		120	68		
Aroclor 1232	ND		58	33		
Aroclor 1242	ND		58	20		
Aroclor 1248	ND		58	11		
Aroclor 1254	ND		58	19		
Aroclor 1260	ND		58	17		
Aldrin	ND		5.8	0.43		
alpha-BHC	ND		5.8	0.44		
beta-BHC	ND		5.8	0.82		
delta-BHC	ND		5.8	0.45		
gamma-BHC (Lindane)	ND		5.8	0.99		
Chlordane (technical)		330	58	14	C1	
4,4'-DDD	ND		12	0.99		
4,4'-DDE.		40	12	2.1	C2	NT
4,4'-DDT	ND		12	7.2		
Dieldrin		74	12	0.41	C1	
Endosulfan I	ND		5.8	1.9		
Endosulfan II	ND		12	0.96		
Endosulfan sulfate	ND		12	1.4		
Endrin	ND		12	0.7		
Endrin aldehyde	ND		12	5.1		
Heptachlor	ND		5.8	0.59		
Heptachlor epoxide	ND		5.8	0.96		
Methoxychlor	ND		58	13	1.0	
Endrin ketone	ND		12	1.8	118/dx	
				C		

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-02 continued...

Analyte Toxaphene Result (ug/kg)

ND

PQL

580

MDL

250

5/18/98 (20)

Client Name Ecology & Environment, Inc. Client ID: ST-5 Lab ID: 71868-03 Date Received: 4/8/98 Date Prepared: 4/15/98 Date Analyzed: 4/19/98 % Solids 76.18 **Dilution Factor** 1

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	109		63	149
Decachlorobiphenyl	85		57	143

Sample results are on a dry weight basis.

		Result			
Analyte		(ug/kg)	PQL	MDL	Flags
Aroclor 1016	ND		13	8.6	
Aroclor 1221	ND		26	15	
Aroclor 1232	ND		13	7.3	
Aroclor 1242	ND		13	4.6	
Aroclor 1248	ND		13	2.6	
Aroclor 1254		650	13	4.2	C1
Aroclor 1260	ND		13	3.7	
Aldrin	ND		1.3	0.097	
alpha-BHC	ND		1.3	0.099	
beta-BHC	ND		1.3	0.18	
delta-BHC	ND		1.3	0.1	
gamma-BHC (Lindane)	ND		1.3	0.22	
Chlordane (technical)	ND		13	3.2	
4,4'-DDD	ND		2.6	0.22	
4,4'-DDE ⁻		20	2.6	0.47	C1
4,4'-DDT	ND		2.6	1.6	
Dieldrin	ND		2.6	0.092	
Endosulfan I	ND		1.3	0.42	
Endosulfan II	ND		2.6	0.22	
Endosulfan sulfate	ND		2.6	0.31	
Endrin	ND		2.6	0.16	
Endrin aldehyde	ND		2.6	1.2	
Heptachlor	ND		1.3	0.13	
Heptachlor epoxide	ND		1.3	0.22	
Methoxychlor	ND		13	2.9	
Endrin ketone	ND		2.6	0.41	
				5/18/	98 CW

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-03 continued...

Ecology & Environment, Inc. Client Name Client ID: DW-1 Lab ID: 71868-04 Date Received: 4/8/98 Date Prepared: 4/15/98 Date Analyzed: 4/19/98 % Solids 78.68 **Dilution Factor** 50

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recovery Limits		
Surrogate	% Recovery	Flags	Low	High	
TCMX	•	X8	63	149	
Decachlorobiphenyl	-	X8	57	143	

Sample results are on a dry weight basis.

		Result			
Analyte		(ug/kg)	PQL	MDL	Flags
Aroclor 1016	ND		600	400	
Aroclor 1221	ND		1200	720	
Aroclor 1232	ND		600	340	
Arocior 1242	ND		600	210	
Aroclor 1248	ND		600	120	
Aroclor 1254	ND		600	200	
Aroclor 1260	ND		600	170	
Aldrin		120	60	4.5	C1
alpha-BHC	ND		60	4.6	
beta-BHC	ND		60	8.6	
delta-BHC	ND		60	4.7	
gamma-BHC (Lindane)	ND		60	10	
Chlordane (technical)		8100	600	150	C1
4,4'-DDD	ND		120	10	
4,4'-DDE	ND		120	22	
4,4'-DDT	ND		120	76	
Dieldrin		740	120	4.3	C1
Endosulfan I	ND		60	20	
Endosulfan II	ND		120	10	
Endosulfan sulfate	ND		120	15	
Endrin	ND		120	7.3	
Endrin aldehyde	ND		120	54	
Heptachlor	ND		60	6.2	
Heptachlor epoxide	ND		60	10	
Methoxychlor	ND		600	130	
Endrin ketone	ND		120	19	
				5)18	gk (W)

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-04 continued...

Result

(ug/kg) PQL MDL

Toxaphene ND 6000 2600

5/15/48

Client Name	. Ecology & Environment, Inc.
Client ID:	BKG-1
Lab ID:	71868-05
Date Received:	4/8/98
Date Prepared:	4/15/98
Date Analyzed:	4/19/98
% Solids	86.3
Dilution Factor	1

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	108		63	149
Decachlorobiphenyl	122		57	143

Sample results are on a dry weight basis.

	Result				
Analyte	(ug/kg)		PQL	MDL	Flags
Aroclor 1016	ND		10	6.8	
Aroclor 1221	ND		21	12	
Aroclor 1232	ND		10	5.8	
Aroclor 1242	ND		10	3.7	
Aroclor 1248	ND		10	2	
Aroclor 1254	ND		10	3.3	
Aroclor 1260	ND		10	3	
Aldrin	ND		1	0.077	
alpha-BHC	ND		1	0.079	
beta-BHC	ND		1	0.15	
delta-BHC	ND		1	0.081	
gamma-BHC (Lindane)	ND		1	0.18	
Chlordane (technical)	ND		10	2.5	
4,4'-DDD	ND		2.1	0.18	
4,4'-DDE	ND		2.1	0.37	
4,4'-DDT		6	2.1	1.3	C1
Dieldrin	ND		2.1	0.073	
Endosulfan I	ND		1	0.33	
Endosulfan II	ND		2.1	0.17	
Endosulfan sulfate	ND		2.1	0.25	
Endrin	ND		2.1	0.12	
Endrin aldehyde	ND		2.1	0.92	
Heptachlor	ND		1	0.1	
Heptachlor epoxide	ND		1	0.17	
Methoxychlor	ND		10	2.3	
Endrin ketone	ND		2.1	0.33	5/18/92

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-05 continued...

Analyte Result (ug/kg) PQL MDL Toxaphene ND 100 45 $\frac{5/18/98 \text{ GW}}{5}$

Client Name	Ecology & Environment, Inc
Client ID:	ST-3D
Lab ID:	71868-07
Date Received:	4/8/98
Date Prepared:	4/13/98
Date Analyzed:	4/16/98
% Solids	-
Dilution Factor	1

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	58		30	122
Decachlorobiphenyl	64		59	126

	R	esuit			
Analyte	(1	ug/L)	PQL	MDL	Flags
Aroclor 1016	ND		0.094	0.063	
Aroclor 1221	ND		0.19	0.11	
Aroclor 1232	ND		0.094	0.054	
Aroclor 1242	ND		0.094	0.023	
Aroclor 1248	ND		0.094	0.028	
Aroclor 1254	ND		0.094	0.043	
Aroclor 1260	ND		0.094	0.036	
Aldrin		0.043	0.0094	0.0007	C1
alpha-BHC	ND		0.0094	0.00072	
beta-BHC	ND		0.0094	0.0013	
delta-BHC	ND		0.0094	0.00074	
gamma-BHC (Lindane)	ND		0.0094	0.0016	
Chlordane (technical)		2.8	0.094	0.023	C1
4,4'-DDD		0.076	0.019	0.0016	C1
4,4'-DDE ·		0.04	0.019	0.0034	C2 (NJ)
4,4'-DDT	ND		0.019	0.012	•
Dieldrin		0.3	0.019	0.00067	C1
Endosulfan I	ND		0.0094	0.0031	
Endosulfan II	ND		0.019	0.0016	
Endosulfan sulfate	ND		0.019	0.0023	
Endrin	ND		0.019	0.0011	
Endrin aldehyde	ND		0.019	0.0084	
Heptachlor	ND		0.0094	0.00096	
Heptachlor epoxide	ND		0.0094	0.0016	
Methoxychlor	ND		0.094	0.021	
Endrin ketone	ND		0.019	0.003	

5/18/98

71

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-07 continued...

1

Client Name Ecology & Environment, Inc.
Client ID: ST-3E
Lab ID: 71868-10

Date Received: 4/8/98

Date Prepared: 4/13/98

Date Analyzed: 4/16/98
% Solids -

Dilution Factor

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	64		30	122
Decachlorobiphenyl	66		59	126

	R	lesult			
Analyte	(1	ug/L)	PQL	MDL	Flags
Aroclor 1016	ND		0.093	0.061	
Aroclor 1221	ND		0.19	0.11	
Aroclor 1232	ND		0.093	0.053	
Aroclor 1242	ND		0.093	0.023	
Aroclor 1248	ND		0.093	0.027	
Aroclor 1254	ND		0.093	0.042	
Arocior 1260	ND		0.093	0.036	
Aldrin	ND		0.0093	0.00069	
alpha-BHC	ND		0.0093	0.00071	
beta-BHC	ND		0.0093	0.0013	
delta-BHC	ND		0.0093	0.00072	
gamma-BHC (Lindane)	ND		0.0093	0.0016	
Chlordane (technical)		0.76	0.093	0.023	C1
4,4'-DDD	ND		0.019	0.0016	
4,4'-DDE	ND		0.019	0.0033	
4,4'-DDT	ND		0.019	0.012	
Dieldrin		0.13	0.019	0.00066	C1
Endosulfan I	ND		0.0093	0.003	
Endosulfan II	ND		0.019	0.0015	
Endosulfan sulfate	ND		0.019	0.0022	
Endrin	ND		0.019	0.0011	
Endrin aldehyde	ND		0.019	0.0083	
Heptachlor	ND		0.0093	0.00094	
Heptachlor epoxide	ND		0.0093	0.0015	
Methoxychlor	ND		0.093	0.021	
Endrin ketone	ND		0.019	0.003	

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-10 continued...

Analyte (ug/L) PQL MDL
Toxaphene ND 0.93 0.5 / 8/98

Client Name	Ecology & Environment, In
Client ID:	UST-1
Lab ID:	71868-13
Date Received:	4/8/98
Date Prepared:	4/13/98
Date Analyzed:	4/16/98
% Solids	-
Dilution Factor	1

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recovery Limits		
Surrogate	% Recovery	Flags	Low	High	
TCMX	50		30	122	
Decachlorobiphenyl	6	Х9	59	126	

		Result			
Analyte		ug/L)	PQL	MDL	Flags
Aroclor 1016	ND		0.094	0.063	
Aroclor 1221	ND		0.19	0.11	
Aroclor 1232	ND		0.094	0.054	
Aroclor 1242	ND		0.094	0.023	
Aroclor 1248		5.1	0.094	0.028	C1
Aroclor 1254	ND		0.094	0.043	
Aroclor 1260	ND		0.094	0.036	
Aldrin	ND		0.0094	0.0007	
alpha-BHC	ND		0.0094	0.00072	
beta-BHC	ND		0.0094	0.0013	
delta-BHC	ND		0.0094	0.00074	
gamma-BHC (Lindane)	ND		0.0094	0.0016	
Chlordane (technical)	ND		0.094	0.023	
4,4'-DDD	ND		0.019	0.0016	
4,4'-DDE	ND		0.019	0.0034	
4,4'-DDT	ND		0.019	0.012	
Dieldrin		0.11	0.019	0.00067	C1
Endosulfan I	ND		0.0094	0.0031	
Endosulfan II	ND		0.019	0.0016	
Endosulfan sulfate	ND		0.019	0.0023	
Endrin	ND		0.019	0.0011	
Endrin aldehyde	ND		0.019	0.0084	
Heptachlor	ND		0.0094	0.00096	
Heptachlor epoxide	ND		0.0094	0.0016	
Methoxychior	ND		0.094	0.021	
Endrin ketone	ND		0.019	0.003	

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-13 continued...

Analyte Toxaphene Result (ug/L)

ND

PQL 0.94

MDL

5/18/98 00

Client Name

Ecology & Environment, Inc.

Client ID:

EB-1 71868-17

Lab ID: Date Received:

71868-17

Date Prepared: Date Analyzed: 4/8/98 4/13/98

Date Analyzed: % Solids

4/16/98

Dilution Factor

1

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	69		30	122
Decachlorobiphenyl	24	X9	59	126

	Result			
Analyte	(ug/L)	PQL	MDL	Flags
Aroclor 1016	ND	0.093	0.061	
Aroclor 1221	ND	0.19	0.11	
Aroclor 1232	ND	0.093	0.053	
Aroclor 1242	ND	0.093	0.023	
Aroclor 1248	ND	0.093	. 0.027	
Aroclor 1254	ND	0.093	0.042	
Aroclor 1260	ND	0.093	0.036	
Aldrin	ND	0.0093	0.00069	
alpha-BHC	ND	0.0093	0.00071	
beta-BHC	ND	0.0093	0.0013	
delta-BHC	ND	0.0093	0.00072	
gamma-BHC (Lindane)	ND	0.0093	0.0016	
Chlordane (technical)	ND	0.093	0.023	
4,4'-DDD	ND	0.019	0.0016	
4,4'-DDE	ND	0.019	0.0033	
4,4'-DDT	ND	0.019	0.012	
Dieldrin	ND	0.019	0.00066	
Endosulfan I	ND	0.0093	0.003	
Endosulfan II	ND	0.019	0.0015	
Endosulfan sulfate	ND	0.019	0.0022	
Endrin	ND	0.019	0.0011	
Endrin aldehyde	ND	0.019	0.0083	
Heptachlor	ND	0.0093	0.00094	
Heptachlor epoxide	ND	0.0093	0.0015	
Methoxychlor	ND	0.093	0.021	
Endrin ketone	ND	0.019	0.003	**

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-17 continued...

| Result | (ug/L) | PQL | MDL | | MDL | | MDL |

Ecology & Environment, Inc. **Client Name** Client ID: ST-1A Lab ID: 71868-19 Date Received: 4/8/98 Date Prepared: 4/15/98 Date Analyzed: 4/18/98 % Solids 88.45 **Dilution Factor** 1

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	99		63	149
Decachlorobiphenyl	103		57	143

Sample results are on a dry weight basis.

	Result			
Analyte	(ug/kg)	PQL	MDL Flags	
Aroclor 1016	ND	11	7	
Aroclor 1221	ND	21	12	
Aroclor 1232	ND	11	6	
Aroclor 1242	ND	11	3.7	
Aroclor 1248	ND	11	2.1	
Arocior 1254	ND	11	3.4	
Aroclor 1260	ND	11	3	
Aldrin	ND	1.1	0.078	
alpha-BHC	ND	1.1	0.081	
beta-BHC	ND	1.1	0.15	
delta-BHC	ND	1.1	0.082	
gamma-BHC (Lindane)	ND	1.1	0.18	
Chlordane (technical)	ND	11	2.6	
4,4'-DDD	ND	2.1	0.18	
4,4'-DDE	ND	2.1	0.38	
4,4'-DDT	ND	2.1	1.3	
Dieldrin	ND	2.1	0.075	
Endosulfan I	ND	1.1	0.34	
Endosulfan II	ND	2.1	0.17	
Endosulfan sulfate	ND	2.1	0.25	
Endrin	ND	2.1	0.13	
Endrin aldehyde	ND	2.1	0.94	
Heptachlor	ND	1.1	0.11	
Heptachlor epoxide	ND	1.1	0.18	
Methoxychlor	ND	11	2.3	
Endrin ketone	ND	2.1	0.34	ì
			0.34 5)18/98 Q	<u>-</u>

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-19 continued...

Result
(ug/kg)
PQL
MDL
Toxaphene
ND
110
46
5/18/98

Ecology & Environment, Inc. Client Name Client ID: ST-1B Lab ID: 71868-20 Date Received: 4/8/98 Date Prepared: 4/15/98 Date Analyzed: 4/19/98 % Solids 86.27 **Dilution Factor** 1

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	94		63	149
Decachlorobiphenyl	104		57	143

Sample results are on a dry weight basis.

	Result			
Analyte	(ug/kg)	PQL	MDL	Flags
Aroclor 1016	ND	11	7.1	
Aroclor 1221	ND	22	13	
Aroclor 1232	ND	11	6.1	
Aroclor 1242	ND	11	3.8	
Aroclor 1248	ND	11	2.1	
Aroclor 1254	ND	11	3.5	-
Aroclor 1260	ND	11	3.1	
Aldrin	ND	1.1	0.08	
alpha-BHC	ND	1.1	0.083	
beta-BHC	ND	1.1	0.15	
delta-BHC	ND	1.1	0.084	
gamma-BHC (Lindane)	ND	1.1	0.19	
Chlordane (technical)	ND	11	2.6	
4,4'-DDD	ND	2.2	0.19	
4,4'-DDE [.]	ND	2.2	0.39	
4,4'-DDT	ND	2.2	1.4	
Dieldrin	ND	2.2	0.077	
Endosulfan I	ND	1.1	0.35	
Endosulfan II	ND	2.2	0.18	
Endosulfan sulfate	ND	2.2	0.26	
Endrin	ND	2.2	0.13	
Endrin aldehyde	ND	2.2	0.96	
Heptachlor	ND	1.1	0.11	
Heptachlor epoxide	ND	1.1	0.18	
Methoxychlor	ND	11	2.4	
Endrin ketone	ND	2.2	0.34	1 4

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-20 continued...

Analyte (ug/kg) PQL MDL

Toxaphene ND 110 47

5/18/98

Ecology & Environment, Inc. Client Name Client ID: ST-2A Lab ID: 71868-21 Date Received: 4/8/98 Date Prepared: 4/15/98 Date Analyzed: 4/19/98 % Solids 87.95 **Dilution Factor** 5

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	104		63	149
Decachlorobiphenyl	198	X9	57	143

Sample results are on a dry weight basis.

	F	lesult			
Analyte	(1	ıg/kg)	PQL	MDL	Flags
Aroclor 1016	ND		55	36	
Aroclor 1221	ND		110	65	
Aroclor 1232	ND		55	31	
Aroclor 1242	ND		55	20	
Aroclor 1248	ND		55	11	
Aroclor 1254	ND		55	18	
Aroclor 1260	ND		55	16	
Aldrin	ND		5.5	0.41	
alpha-BHC	ND		5.5	0.42	
beta-BHC	ND		5.5	0.78	
delta-BHC	ND		5.5	0.43	
gamma-BHC (Lindane)	ND		5.5	0.95	
Chlordane (technical)		120	55	13	C1
4,4'-DDD	ND		11	0.94	
4,4'-DDE	ND		11	2	
4,4'-DDT	ND		11	6.9	
Dieldrin	ND		11	0.39	
Endosulfan I	ND		5.5	1.8	
Endosulfan II	ND		11	0.91	
Endosulfan sulfate	ND		11	1.3	
Endrin	ND		11	0.66	
Endrin aldehyde	ND		11	4.9	
Heptachlor	ND		5.5	0.56	
Heptachlor epoxide	ND		5.5	0.92	
Methoxychlor	ND		55	12	
Endrin ketone	ND		11	1.8	

5/18/98 100

83

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-21 continued...

Result

(ug/kg) PQL MDL

Toxaphene ND 550 240

5/18/98

Client Name Ecology & Environment, Inc. Client ID: ST-2B Lab ID: 71868-22 Date Received: 4/8/98 Date Prepared: 4/15/98 Date Analyzed: 4/19/98 % Solids 77.81 **Dilution Factor** 1

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	98		63	149
Decachlorobiphenyl	85		57	143

Sample results are on a dry weight basis.

	Result				
Analyte	(ug/kg)		PQL	MDL	Flags
Aroclor 1016	ND		12	8.1	
Aroclor 1221	ND		24	14	
Aroclor 1232	ND		12	6.9	
Aroclor 1242	ND		12	4.3	
Aroclor 1248	ND		12	2.4	
Aroclor 1254	ND		12	4	
Aroclor 1260	ND		12	3.5	
Aldrin	ND		1.2	0.091	
alpha-BHC	ND		1.2	0.094	
beta-BHC	ND		1.2	0.17	
delta-BHC	ND		1.2	0.096	
gamma-BHC (Lindane)	ND		1.2	0.21	
Chlordane (technical)		11	12	3	J C1
4,4'-DDD	ND		2.4	0.21	
4,4'-DDE	ND		2.4	0.44	
4,4'-DDT	ND		2.4	1.5	\sim
Dieldrin		6.5	2.4	0.087	C2 (NJ)
Endosulfan I	ND		1.2	0.4	
Endosulfan II	ND		2.4	0.2	• •
Endosulfan sulfate	ND		2.4	0.3	
Endrin	ND		2.4	0.15	
Endrin aldehyde	ND		2.4	1.1	
Heptachlor	ND		1.2	0.12	
Heptachlor epoxide	ND		1.2	0.2	
Methoxychlor	ND		12	2.7	
Endrin ketone	ND		2.4	0.39	
				. 1	1

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-22 continued...

Analyte Toxaphene Result (ug/kg)

ND

PQL

120

MDL

53 5/18/98

Client Name Ecology & Environment, Inc.
Client ID: ST-3A
Lab ID: 71868-25

Date Received: 4/8/98

Date Prepared: 4/13/98

Date Analyzed: 4/16/98
% Solids Dilution Factor 1

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	65		30	122
Decachlorobiphenyl	73		59	126

Regult

Kesuit					
Analyte	(L	ıg/L)	PQL	MDL	Flags
Aroclor 1016	ND		0.098	0.065	
Aroclor 1221	ND		0.2	0.12	
Aroclor 1232	ND		0.098	0.056	
Aroclor 1242	ND		0.098	0.024	
Aroclor 1248	ND		0.098	0.029	
Aroclor 1254	ND		0.098	0.045	
Aroclor 1260	ND		0.098	0.038	
Aldrin	ND		0.0098	0.00073	
alpha-BHC	ND		0.0098	0.00075	
beta-BHC	ND		0.0098	0.0014	
delta-BHC	ND		0.0098	0.00077	
gamma-BHC (Lindane)	ND		0.0098	0.0017	
Chlordane (technical)		12	0.098	0.024	C1 D
4,4'-DDD	ND		0.02	0.0017	
4,4'-DDE		0.18	0.02	0.0035	C1
4,4'-DDT	ND		0.02	0.012	
Dieldrin		0.086	0.02	0.0007	C2(NJ)
Endosulfan I	ND		0.0098	0.0032	
Endosulfan II	ND		0.02	0.0016	
Endosulfan sulfate	ND		0.02	0.0024	
Endrin	ND		0.02	0.0012	
Endrin aldehyde	ND		0.02	0.0088	3
Heptachlor		0.019	0.0098	0.001	C5(N2)
Heptachlor epoxide		0.076	0.0098	0.0016	C2(NJ)
Methoxychlor	ND		0.098	0.022	•
Endrin ketone	ND		0.02	0.0031	

5/18/98

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-25 continued...

Result
Analyte (ug/L) PQL MDL
Toxaphene ND 0.98 0.53

5/18/98 @

Client Name

Ecology & Environment, Inc.

Client ID: Lab ID:

ST-3B

Date Received:

71868-28

Date Prepared: Date Analyzed:

4/8/98 4/13/98

% Solids

4/16/98

Dilution Factor

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	75		30	122
Decachlorobiphenyl	59		59	126

Recult

	K	esuit			
Analyte	((ıg/L)	PQL	MDL	Flags
Aroclor 1016	ND		0.093	0.061	
Aroclor 1221	ND		0.19	0.11	
Aroclor 1232	ND		0.093	0.053	
Aroclor 1242	ND		0.093	0.023	
Aroclor 1248	ND		0.093	0.027	
Aroclor 1254	ND		0.093	0.042	
Aroclor 1260	ND		0.093	0.036	
Aldrin	ND		0.0093	0.00069	
alpha-BHC	ND		0.0093	0.00071	
beta-BHC	ND		0.0093	0.0013	
delta-BHC	ND		0.0093	0.00072	
gamma-BHC (Lindane)	ND		0.0093	0.0016	
Chlordane (technical)		1.1	0.093	0.023	C1
4,4'-DDD	ND		0.019	0.0016	
4,4'-DDE	ND		0.019	0.0033	
4,4'-DDT	ND		0.019	0.012	
Dieldrin		0.17	0.019	0.00066	C1
Endosulfan I	ND		0.0093	0.003	
Endosulfan II	ND		0.019	0.0015	
Endosulfan sulfate	ND		0.019	0.0022	
Endrin	ND		0.019	0.0011	
Endrin aldehyde	ND		0.019	0.0083	
Heptachlor	ND		0.0093	0.00094	
Heptachlor epoxide		0.068	0.0093	0.0015	C1
Methoxychlor	ND		0.093	0.021	
Endrin ketone	ND		0.019	0.003	

5/18/78/10

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-28 continued...

Result

(ug/L) PQL MDL

Toxaphene ND 0.93 0.5

5/18/PIDE

Client Name Ecology & Environment, Inc.
Client ID: ST-3C
Lab ID: 71868-31

Date Received: 4/8/98

Date Prepared: 4/13/98

Date Analyzed: 4/16/98

% Solids -

Dilution Factor

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
TCMX	63		30	122
Decachlorobiphenyl	69		59	126

	Re	esult				
Analyte	(ug/L)		PQL	MDL	Flags	
Aroclor 1016	ND		0.093	0.062		
Aroclor 1221	ND		0.19	0.11		
Aroclor 1232	ND		0.093	0.053		
Aroclor 1242	ND	,	0.093	0.023		
Aroclor 1248	ND		0.093	0.027		
Aroclor 1254	ND		0.093	0.043		
Aroclor 1260	ND		0.093	0.036		
Aldrin	ND		0.0093	0.0007		
alpha-BHC	ND		0.0093	0.00072		
beta-BHC	ND .		0.0093	0.0013		
delta-BHC	ND		0.0093	0.00073		
gamma-BHC (Lindane)	ND		0.0093	0.0016		
Chlordane (technical)		0.97	0.093	0.023	C1	
4,4'-DDD	ND		0.019	0.0016		
4,4'-DDE	ND		0.019	0.0034		
4,4'-DDT	ND		0.019	0.012		
Dieldrin		0.14	0.019	0.00067	C1	
Endosulfan I	ND		0.0093	0.003		
Endosulfan II	ND		0.019	0.0016		
Endosulfan sulfate	ND		0.019	0.0023		
Endrin	ND		0.019	0.0011		
Endrin aldehyde	ND		0.019	0.0083		
Heptachlor	ND		0.0093	0.00095		
Heptachlor epoxide		0.06	0.0093	0.0016	C1	
Methoxychlor	ND		0.093	0.021		
Endrin ketone	ND		0.019	0.003		

Organochlorine Pesticides and PCBs by USEPA Method 8081/8082 data for 71868-31 continued...

Analyte Toxaphene Result (ug/L)

ND

PQL 0.93

MDL

0.51 PK

75 Hawthorne Street San Francisco, California 94105

•	CHAIN OF CUSTOD	Y RECOR	D		San Francisco, California 94105
PROJ. NO. PROJECT NAME KJ9103 WO/ TANK ASSESSMENT	NO.	'د/		1/5/	
SAMPLERS: (Signature) The felle Jud Siff	OF CON-	OR P		97.5% 87.5%	REMARKS
STA. NO. DATE TIME OF STATION LOCATION				7 3	San Francisco, California 94105 REMARKS
ST-4 4/6 1559 X ST-4A	2X407 X	X4 X	*	X	
57-4) 1608 X 5T-4B	2×40====================================			\$0	
57-5 1630 X 57-5	2×402, X			*****	
DW-1 1617 X DW-1	2x407 X			X	
3KG-1 1650 X BKG-1	JX40Z K	Xar X	Xx	X	
5T-3 1545 X 5T-3D	JXIL.	XS	X		
ST-3 1545 X ST-3D	1X12.	X5			·
5T-3 1545 X ST-3D	4 X 40m EXE			*XEE	
17-3 1550 X ST-3E	2x14	X	·X		
5T-3 1550 X ST-3E ,		X			
57-3 1550 X ST-3E	4x40m X			X	
15T-1 1635 X 45T-1	IXIL	X			* As requested in contract w/
15T-1 1635 X UST-1	ILIL	X			Sound Laboratory
15T-1 1635 X UST-1	6x40m2X			įX.	
TB 1 1800 X TB-2-4/4/98	1X40m/ X5			1	
Relinquished by: (Signature) Date / Time Received by:	(Signature) Relia	inquished by	: (Signatu	rej	Date / Time Received by: (Signature)
Jehun 4/4/98 1200 FED-X					
Relinquished by: (Signature) Date / Time Received by: (Signature)		Relinquished by: (Signature)			Date / Time Received by: (Signature)
Relinquished by: (Signature) Date / Time Received for (Signature)	Laboratory by:	Date /Tim 8/98 93	ne F	Remark	1ks EDX B/L # 804733300967

Office of Enforcement

á

75 Hawthorne Street
San Francisco, California 94105

CHAIN OF CUSTODY RECORD PROJECT NAME PROJ. NO. WDI TANK ASSESSMENTT NO. OF REMARKS CON-**TAINERS** STA. NO. DATE TIME STATION LOCATION 1700 1200 * As requested in contract w/ Sound Laboratory Relinquished by: (Signature) Date / Time Date / Time Received by: (Signature) Received by: (Signature) Relinquished by: (Signature) FED-X Date / Time Relinquished by: (Signature) Date / Time Received by: (Signature) Relinquished by: (Signature) Received by: (Signature) Relinquished by: (Signature) Date / Time Date / Time Received for Laboratory by: Remarks (Signaturet 4/8/AS 930AM FED-X B/L # Distribution: Original Accompanies Shipment; Copy to Coordinator) Field Files

ST.

1,800 1 1 1006 295

ION

75 Hawthorne Street San Francisco, California 94105

CHAIN OF CUSTODY RECORD

						OHAIII	UF CUS	00		.00.						San Francisco, Camorina 9410
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K5910	3	WDI TANK ASSESSMENT			NO.					s /,	5/ N	0/8-9/24)	3/			
SAMPLER	RS: (Sign						OF		/	/ an	/ B	/ _s i)	᠈ᢅ᠙ᢢ			
MI	elu		ر ح	Dug	Soff)	·	CON-		/6	gt/	W/\	rik) (9L 78			REMARKS
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51-2		1445		X	ST-2A		البد ا	X	X	X	X		×			
ST-Z		1451		X	5T-2B		1	ίX	X	X	3/2	ļ				
ST-3		1520		X	ST-3A		1×12.			L_,		X	ŗ	NasH	11×H1	
ST-3		1520		X	ST-3A	···	1×12.			X	君	2				
57-3		1520		X	ST-3A		1×12.		X							
57-3		1520		X	ST-3A		6×40ml	X					×			
ST-3		1525		X	ST-38		RXIL.			X		X		NoH	14)12	ON 9010 ANALYSIS
ST-3		1525		X	ST-3B	· · · · · · · · · · · · · · · · · · ·	1×12.		X	*						
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57-3		1530		X	5T-3C		2X/LIT.			SK		X		SOUND	LABOR	<u> Атоку</u>
ST-3		1530		X	ST-3C		IXIL.		X							
55-3		1530		X	ST-3C		4×40 ml	X			ļ		×			
IB	V	1800		X	TB-1-4	16/98	1×4ppl	×								
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Relinquish	ned by: I	Signature)		Date / Time	Received for Laborator		4/8	Dat 3/98	e /Ti	me 30/1	- 1	emari	"FED-X 80473	B/L	# 967
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Client: Ecology & Environment, Inc.

Date: April 29, 1998

Project:

KJ9103 WDI Tank Assessment

Lab No.: 71868

SAMPLE EXTRACTION AND ANALYSIS

VOLATILE ORGANICS

Samples 71868-1 through 71868-5, 71868-19 through 71868-22 (soils) and 71868-8, 71868-11, 71868-14, 71868-15, 71868-18, 71868-26, 71868-29, 71868-32 and 71868-33 (liquids) were analyzed for volatile organics in accordance with EPA Method 8260. The soil samples were prepared and analyzed on 4-10-98. The liquid samples were prepared and analyzed on 4-10-98.

Sample 71868-14 was received at a pH of 7. Sample 71868-18 was received at a pH of 5.

All quality control was within the acceptance limits.

Acetone calculation from sample 71868-1 18.98 x 5ml 5.4507g x 0.8354

SEMIVOLATILE ORGANICS

Samples 71868-1 through 71868-5 and 71868-20 through 71868-22 (soils) were analyzed for semivolatile organics in accordance with EPA Method 8270. The samples were prepared and analyzed on 4-10-98.

All quality control was within the acceptance limits.

Instrument reading x final volume x dilution factor sample weight or volume x dry weight

PESTICIDES AND PCBs

Samples 71868-1 through 71868-5, 71868-19 through 71868-22 (soils) and 71868-7, 71868-10, 71868-13, 71868-17, 71868-25, 71868-28, and 71868-31 (liquids) were analyzed for pesticides and PCBs in accordance with EPA Method 8081. The soil samples were extracted on 4-15-98 analyzed on 4-18-98. The liquid samples were extracted on 4-13-98 and analyzed on 4-16-98.

Second column confirmation was performed. The values are flagged "C1" or "C2" as deemed appropriate.

The percent recovery of DCB (surrogate) in the method blank associated with the liquid samples failed low. Reanalysis exhibited similar results. Insufficient sample volume was available for reextraction and reanalysis.

All quality control was within the acceptance limits.

Extract concentration x extract volume x dilution factor
Sample volume or weight x percent solids

ANALYTICAL DATA REVIEW SUMMARY

Site Name:	WDI Tank Assessment
Location:	Santa Fe Springs, California
PAN No.:	0294-WDSF-XX
TDD No.:	09-9803-0006
Laboratory:	Sound Analytical Services, Inc.
Sampling Date:	April 6, 1998
Analytical Method:	8260
Sample Matrix:	Soil/Water

Sample No.	Sample I.D.	Laboratory I.D.
1	ST-4A	71868-01
2	ST-4B	71868-02
3	ST-5	71868-03
4	DW-1	71868-04
5	BKG-1	71868-05
6	ST-3D	71868-08
7	ST-3E	71868-11
8	UST-1	71868-14
9	TB-2-4/6/98	71868-15
10	EB-1	71868-18
11	ST-1A	71868-19
12	ST-1B	71868-20
13	ST-2A	71868-21
14	ST-2B	71868-22
15	ST-3A	71868-26
16	ST-3B	71868-29
17	ST-3C	71868-32
18	TB-1-4/6/98	71868-33

Data Reviewer:	Trisha J. Woolslayer	Jusha	S. Walstyck 3/15/98
Chemist QA Reviewer:			
START PM Acceptance:	,		

GC/MS METHODS DATA VALIDATION WORKSHEET – SUMMARY

Labor Revie Revie	rt No.: ratory: wer: w Date: rtical Method:	71868 Sound And Trisha J. 1 May 14, 1 8260	Woolslaye	ervices, Inc. er		
No. of	f Samples	Water:	9	Solid:	9	Other:
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.	Holding Time Surrogate Research Matrix Spikes Blanks Initial Calibra Continuing Continuing Compound I Compound	es ecovery e/Spike Dup ation Calibration dards e Performan dentification Quantitation cation ormance	licate ace	em is within QC	Section Property Property	
oorted		ents: <u>The sa</u> -custody. Cl	P summe			vatives used were not re- ed. Therefore, the data was

GC/MS VOLATILE AND SEMI-VOLATILE ANALYSES

DATA PACKAGE COMPLETENESS CHECKLIST

 	X Included: no problems * Included: problems noted in review O Not Included and/or Not Available NR Not Required RS Provided As Re-submission
X Case Na	rrative
Quality Control Sun $ \begin{array}{c} X \\ X \end{array} $ Sample and Blank D	Data Summary Sheets (Form I) Surrogate Recovery Summary (Form II) Matrix Spoke/Spike Duplicate Recoveries (Form III) Method Blank Summaries (Form IV) GC/MS Tuning and Mass Calibration (Form V) Initial Calibration Data (Form VI) Continuing Calibration Data (Form VII) Internal Standard Area Summary (Form VIII) Pata Package Section Reconstructed Ion Current (RIC) Chromatogram
$\begin{array}{c} X \\ X \\ X \\ X \\ X \\ X \end{array}$	Quantation Reports Quantitation Diagnostic Reports Raw and Enhanced Mass Spectra Reference Mass Spectra for Target Compounds EPA/NIH Mass Spectral Library Search for TICs
X X X	age Section DFTPP and/or BFB mass spectra and mass listings RIC Chromatogram for Standards and MS/MSD Samples Quantitation Reports for Standards and MS/MSD List of Instrumnet Detection Limits Chain-of-Custody Records Sample Preparation and Analysis Run Logs Other (i.e. calculation examples)

I .	HOLDING TIMES
	Acceptable X Outside QC Limits
	Samples were prepared and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those sample fractions prepared or analyzed outside holding time requirements, the results have been qualified as estimated (J).
	Water Samples:
	VOA - 7 days for analysis BNA - 7 days for extraction, 40 days for analysis
	Soil or Other Matrices:
	VOA - 14 days for analysis BNA - 14 days for extraction, 40 days for analysis
	Comments:

II. GC/N	IS TUNING	CRITERIA
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Acceptable X Outside QC Limits

Unless noted below, GC/MS Tuning Compounds (BFB for VOA; DFTPP for BNA) have been analyzed every 12 hours and met ion abundance requirements. (See SW846 Method 8260 p. 34 for VOA criteria and Method 8270 p. 31 for BNA requirements.)

Comments:

III. INITIAL AND CONTINUING CALIBRATIONS

Acceptable	Outside QC Limits	\boldsymbol{X}
	 •	

The Relative Response Factor (RRF) data were reviewed for the initial and continuing calibrations. Unless flagged below, a 5-point initial calibration was run, and continuing calibrations were performed at the beginning and at the end of any group of samples and at least every 12 hours. In addition, average RRF, Percent relative Standard Deviation (%RSD) and Percent Difference (%D) values were within control limits (aver. RRF >= 0.05; %RSD <= 30; %D <= 25). or analytes which exceeded these control limits, associated data are qualified as estimated (J). In cases where the low calibration level was not detected, the detection limit is qualified (UJ). In cases where the analyte was not detected in the calibration, all associated data are rejected (R).

Comments:

The following table shows compounds which had %Ds outside QC limits. In the associated soil samples, positive results for these compounds are qualified J.

Compound	%D
Acetone	27.505
2-Butanone	27.087
2-Hexanone	25.563

IV.	ERROR	DETERMINATION
1 V.		

X	Matrix Spike/Spike Duplicate Samples Analyzed
	No Spike Samples Analyzed

Matrix spike samples are used for a qualitative indication of result bias and precision. Spike recoveries of less than 80% or greater than 120% may be sufficient cause to flag associated data as estimated (J) if the validator believes that the deviation is not due to matrix effects. Recoveries may also be compared with control limits established for the individual compounds (Appendix B).

Comments:

Acceptable X Detection	n Limits Adju	isted
The following blanks were analyzed:	;	
X Preparation Blanks		Field Blanks
Instrument Blanks	\overline{X}	Rinsate Blanks
Background Samples	X	VOA Trip Blanks
Preparation (method) blanks were		
preparation or instrument blank wa	•	_
dard, prior to sample analysis unles		•
	alatılac campla	is. Any compound detected in the
analyzed after high concentration vo ple and also detected in any associat	•	• •

VI. INTERNAL STANDARD AREA	AS	AREA	ARD	STANDA	INTERNAL	VI.
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Acceptable	X	Outside QC Limits	

Internal Standard areas for samples analyzed within a sample group must be within the range of -50% to +100% of the internal standard area for the continuing calibration. If the internal standard area is between 10% and 50% of this value, the associated results are qualified as estimated (J) and the detection limits are qualified as estimated (UJ). If the internal standard area is <10% of the calibration area, both the associated results and detection limits are rejected (R). If the internal standard area is > 100% of the calibration area, the associated results are qualified as estimated (J). For lists of analytes associated with a particular internal standard see SW 846 Method 8260 p.37 for VOA, or Method 8270 p. 33 for BNAs. Internal standards which exceeded these limits are noted below and the associated analytes are qualified on the attached sample report forms.

Comments:

VII.	SURROGATE	RECOVERIES
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Acceptable ____X Outside QC Limits

Surrogate recoveries should be checked against the guidance values listed in SW846 (VOAs: 8260-42, BNAs: 8270-38). List those recoveries which exceed these ranges below. Analytes associated with these surrogates are considered estimated (J).

Comments:

VIII.	DUPL	ICATE	ANALY	SES
-------	------	--------------	-------	-----

Acceptable	X	Outside QC Limits	

Type of duplicates analyzed:

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the following equation:

$$RPD = \underline{2(Value 1 - Value 2) \times 100\%}$$

$$Value 1 + Value 2$$

Qualify the results as estimated (J) for any analyte whose RPD exceeds that specified in the Sampling Plan.

Comments:

RPDs are within QC limits. No sampling plan was available.

IX. ANALYTE IDENTIFICATION

Evaluate the ion profiles for the sample analytes and compare them to the library ion profiles provided by the laboratory. Note any identifications which are not sufficiently supported by comparison to known ion profiles.

Comments:

X. ANALYTE QUANTITATION/DETECTION LIMITS

Confirm that analyte quantitation was performed correctly using the following formula:

sample concentration = (analyte area)(concentration of I.S.)
(area of I.S.)(RRF)

where I.S. is the internal standard.

Calculate the quantitation limit from the concentration of the lowest standard. All results reported below this limit are qualified as presumptively present at an estimated quantity (NJ) and noted on the attached sample data sheets.

Comments:

XI. TIC EVALUATION

Evaluate all tentatively identified compounds (TICs). Confirm that TICs are reported only as a class of compounds and that they are qualified as presumptively present at an estimated concentration.

Comments:

XII. OVERALL ASSESSMENT OF GENERAL ANALYTICAL DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

Acceptable Accepted with QualificationX Rejected	<u> </u>
Accepted data meet the minimum requirements for the following	EPA data category:
ERS Screening Non-definitive with 10% Conformation by Definitive Methodology	
Definitive	X
Without Comprehensive Statistical Error Determination With Comprehensive Statistical error Determination	X

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments:

- The sample matrix and the types of preservatives used were not reported on the chain-of-custody.
- CLP summary sheets were not provided. Therefore, the data was validated based on the raw data package.
- Several compounds were qualified J in soil samples due to continuing calibration %RSDs outside QC limits..

ANALYTICAL DATA REVIEW

APPENDIX A

DATA VALIDATION QUALIFIERS

The following list of data validation qualifiers may be used in this data review package:

J The associated numerical value is an estimated quantity because the reported concentrations were less than the required detection limits or because quality control criteria were not met. N Presumptive evidence of presence of material. Presumptive evidence of the presence of the material at an estimated quantity. NJ The material was analyzed for, but not detected. The associated numerical U value is the sample detection limit or adjusted sample detection limit. UJ The material was analyzed for, but not detected. The reported detection limit is estimated because quality control criteria were not met. The sample results are rejected (analyte may or may not be present) due to R gross deficiencies in quality control criteria. Any reported value is unusable Recovery Not Determined (Optional). **RND** Precision Not Determined (Optional). PND

ANNOTATED DATA SUMMARY SHEETS

Hand-annotated copies of the Data Summary Sheets from the analytical data package follow. When appropriate, detection limits have been adjusted to reflect effects of relevant qualifications noted during the data review. Errors in the reporting of detected compound results will usually not be changed by hand. In these cases, the laboratory may be required to re-submit portions of the data package and any affected Data summary Sheets. Any additional quality control failures have been flagged using the above listed data validation qualifiers.

Pages of Annotated Data summary Sheets follow.

Client Name	Ecology & Environment, Inc
Client ID:	ST-4A
Lab ID:	71868-01
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	83.54
Dilution Factor	1

Volatile Organics by USEPA Method 5035/8260B Modified

			Recovery Limits		
Surrogate	% Recovery	Flags	Low	High	
Dibromofluoromethane	118		75	154	
Toluene-d8	103		65	141	
Bromofluorobenzene	105		82	157	

Sample results are on a dry weight basis.

		Result			
Analyte		(ug/kg)	PQL	MDL	Flags
Dichlorodifluoromethane	ND		11	1.12	
Chloromethane	ND		11	4.39	
Vinyl Chloride	ND		11	1.29	
Bromomethane	ND		11	1.68	
Chloroethane	ND		11	4.43	
Trichlorofluoromethane	ND		11	1.68	
1,1-Dichloroethene	ND		. 11	2.42	
1,1,2-Trichlorotrifluoroethane	ND		11	1.98	_
Acetone		21	11	3.73	J
Methylene Chloride		3.5	11	1.83	J
trans-1,2-Dichloroethene	ND		11	2.05	
1,1-Dichloroethane	ND		11	1.27	
2,2-Dichloropropane	ND		11	1.09	
cis-1,2-Dichloroethene	ND		11	1.55	
2-Butarione	ND		11	3.97	
Bromochloromethane	ND		11	4.07	
Chloroform	ND		11	3.64	
1,1,1-Trichloroethane	ND		11	2.87	
Carbon Tetrachloride	ND		11	1.92	
1,1-Dichloropropene	ND		11	2.15	
Benzene	ND		11	1.83	
1,2-Dichloroethane	ND		11	1.82	
Trichloroethene	ND		11	2.42	
1,2-Dichloropropane	ND		11	1.78	
Dibromomethane	ND		11	2.03	
Bromodichloromethane	ND		11	1.96	11

Slight

Volatile Organics by USEPA Method 5035/8260B Modified data for 71868-01 continued...

cis-1,3-Dichloropropene ND 11 1.82 Toluene 19 11 2.2 4-Methyl-2-pentanone ND 11 3.39 trans-1,3-Dichloropropene ND 11 1.41 1,1,2-Trichloroethane ND 11 1.76 Tetrachloroethane ND 11 1.76 Dibromochloromethane ND 11 1.76 Dibromochloromethane ND 11 1.74 L2-Dibromochlane ND 11 1.74 Chlorobenzene ND 11 1.74 Chlorobenzene ND 11 1.74 Chlorobenzene ND 11 1.74 Chlorobenzene ND 11 1.83 J Tytere 19 22 3.65 J O-Xylene 3 11 1.82 J Styrene ND 11 1.65 Bromoform ND 11 1.65 Isopropylbenzene			Result		
Toluene	Analyte		(ug/kg)	PQL	MDL
4-Methyl-2-pentanone ND 11 3.39 trans-1,3-Dichloropropene ND 11 1.41 1,1,2-Trichloroethane ND 11 1.76 Tetrachloroethene ND 11 2.1 1,3-Dichloropropane ND 11 1.76 Dibromochloromethane ND 11 1.55 1,2-Dibromoethane ND 11 1.66 2-Hexanone ND 11 1.74 Chlorobenzene ND 11 1.74 Chlorobenzene ND 11 1.94 1,1,1,2-Tetrachloroethane ND 11 1.66 Ethylbenzene 4.6 11 1.83 J mXylene 19 22 3.65 J O-Xylene 3 11 1.82 J Styrene ND 11 1.68 Bromoform ND 11 1.65 Isopropylbenzene ND 11 1.65 1,1,2,2-Tetrachloroetha		ND			
trans-1,3-Dichloropropene ND 11 1.41 1,1,2-Trichloroethane ND 11 1.76 Tetrachloroethane ND 11 2.1 1,3-Dichloropropane ND 11 1.76 Dibromochloromethane ND 11 1.55 1,2-Dibromoethane ND 11 1.55 1,2-Dibromoethane ND 11 1.74 Chlorobenzene ND 11 1.94 -Hexanone ND 11 1.94 Chlorobenzene ND 11 1.94 HI,1,2-Tetrachloroethane ND 11 1.83 J Imp-Xylene 4.6 11 1.83 J m.p-Xylene 19 22 3.65 J o-Xylene 19 22 3.65 J Styrene ND 11 1.68 Bromoform ND 11 1.65 Isopropylbenzene ND 11 1.65 Isopropyl			19		
1,1,2-Trichloroethane	•				
Tetrachloroethene	trans-1,3-Dichloropropene				1.41
1,3-Dichloropropane ND	1,1,2-Trichloroethane			11	1.76
Dibromochloromethane ND 11 1.55 1,2-Dibromoethane ND 11 1.66 2-Hexanone ND 11 1.74 Chlorobenzene ND 11 1.94 1,1,1,2-Tetrachloroethane ND 11 1.66 Ethylbenzene ND 11 1.83 J m,p-Xylene 19 22 3.65 J 0-Xylene 3 11 1.82 J Styrene ND 11 1.68 Bromoform ND 11 1.68 Bromoform ND 11 1.65 Isopropylbenzene 2.5 11 1.9 J Bromobenzene ND 11 1.65 Isopropylbenzene 11 1.65 Isopropylbenzene 11 1.65 Isopropylbenzene J 1.1 1.65 Isopropylbenzene Itopropylbenzene J 1.6 Itopropylbenzene Itopropylbenzene Itopropylbenzene Itopropylbenzene Itopropylbenzene Itopropylbenzene	Tetrachloroethene			11	2.1
1,2-Dibromoethane	1,3-Dichloropropane	ND		11	1.76
2-Hexanone	Dibromochloromethane	ND		11	1.55
Chlorobenzene ND 11 1.94 1,1,1,2-Tetrachloroethane ND 11 1.66 Ethylbenzene 4.6 11 1.83 J m,p-Xylene 19 22 3.65 J o-Xylene 3 11 1.82 J Styrene ND 11 1.68 Isopropylbenzene 11 1.65 Isopropylbenzene 2.5 11 1.9 J Bromobenzene ND 11 1.65 Isopropylbenzene 11 1.65 Isopropylbenzene 11 1.65 Isopropylbenzene 11 1.65 Isopropylbenzene 1.12 2.6 Incorden in the propylbenzene 1.1 1.65 Isopropylbenzene 1.1 2.1 2.45 Incorden in the propylbenzene 1.1 1.9 J 2.45 Incorden in the propylbenzene 1.1 1.9 J 2.45 Incorden in the propylbenzene 1.1 1.9 J 2.04 J 3.5 11 1.9 J 1.2 2.04	1,2-Dibromoethane	ND		11	1.66
1,1,1,2-Tetrachloroethane ND 11 1.66 Ethylbenzene 4.6 11 1.83 J m,p-Xylene 19 22 3.65 J o-Xylene 3 11 1.82 J Styrene ND 11 1.68 Bromoform ND 11 1.65 Isopropylbenzene ND 11 1.99 J Bromobenzene ND 11 1.65 1.1,2,2-Tetrachloroethane ND 11 2.16 1.216 1.2,3-Trichloropropane ND 11 2.45 1.216 1.2,3-Trichloropropane ND 11 2.45 1.216 1.2,2-Trichlorotoluene ND 11 1.99 J J 2.45 1.204	2-Hexanone	ND		11	1.74
Ethylbenzene 4.6 11 1.83 J m,p-Xylene 19 22 3.65 J o-Xylene 3 11 1.82 J Styrene ND 11 1.68 B Bromoform ND 11 1.65 I I 1.9 J Bromobenzene ND 11 1.65 I 1.9 J Bromobenzene ND 11 1.65 I 1.9 J 1,1,2,2-Tetrachloroethane ND 11 2.16 1.2 1.1 1.65 I 1.9 J 1,2,3-Trichloropropane ND 11 2.16 1.2 1.2 1.99 J 2.45 I 1.99 J 1.24 1.1 1.92 3.5 <t< td=""><td>Chlorobenzene</td><td>ND</td><td></td><td>11</td><td>1.94</td></t<>	Chlorobenzene	ND		11	1.94
m,p-Xylene 19 22 3.65 J o-Xylene 3 11 1.82 J Styrene ND 11 1.68 Bromoform ND 11 1.65 Isopropylbenzene D 11 1.9 J Bromobenzene ND 11 1.65 I 1.1 1.9 J 1,1,2,2-Tetrachloroethane ND 11 2.16 1 1.1 2.16 1 1.2,3-Trichloropropane ND 11 2.45 1 1.9 J 1 1.0 1.0 1 1.0 1.0 1 <td>1,1,1,2-Tetrachloroethane</td> <td>ND</td> <td></td> <td>· 11</td> <td>1.66</td>	1,1,1,2-Tetrachloroethane	ND		· 11	1.66
o-Xylene 3 11 1.82 J Styrene ND 11 1.68 Bromoform ND 11 1.65 Isopropylbenzene 2.5 11 1.9 J Bromobenzene ND 11 1.65 1.1,2,2-Tetrachloroethane ND 11 2.16 1.2,3-Trichloropropane ND 11 2.45 1.2,45 1.2	Ethylbenzene		4.6	11	1.83 J
Styrene ND 11 1.68 Bromoform ND 11 1.65 Isopropylbenzene 2.5 11 1.9 J Bromobenzene ND 11 1.65 1.10 1.05 1.05 1.1 1.05 1.1 1.05 1.0	m,p-Xylene		19	22	3.65 J
Styrene ND 11 1.68 Bromoform ND 11 1.65 Isopropylbenzene 2.5 11 1.9 J Bromobenzene ND 11 1.65 1.1 1.65 1.1 1.65 1.1 1.65 1.1 1.65 1.2 1.65 1.1 1.65 1.1 1.65 1.2 1.65 1.2 1.65 1.2 1.65 1.2 1.65 1.2 1.65 1.2 1.65 1.2 1.65 1.2 1.65 1.2 1.65 1.2 1.65 1.2 1.65 1.2 1.65 1.2 1.65 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.1 1.93 1.2	· · · · · · · · · · · · · · · · · · ·			. 11	
Bromoform ND	•	ND		11	1.68
Bromobenzene ND 11 1.65 1,1,2,2-Tetrachloroethane ND 11 2.16 1,2,3-Trichloropropane ND 11 2.45 n-Propylbenzene 5.8 11 1.99 J 2-Chlorotoluene ND 11 1.99 J 4-Chlorotoluene ND 11 2.04 L 4-Chlorotoluene ND 11 2.04 L 4-Chlorotoluene ND 11 1.95 J 4-Butylbenzene 3.8 11 2.04 J 1,2,4-Trimethylbenzene 7.7 11 2.15 J 1,2-Dithlorobenzene ND 11 2.15 J 1,3-Dichlorobenzene ND 11 1.93 L 1,4-Dichlorobenzene ND 11 2.26 L 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 2.31 J 1,2-Dibromo-3-chloropropane <	•	ND	• •	11	
Bromobenzene ND 11 1.65 1,1,2,2-Tetrachloroethane ND 11 2.16 1,2,3-Trichloropropane ND 11 2.45 n-Propylbenzene 5.8 11 1.99 J 2-Chlorotoluene ND 11 1.96 J 4-Chlorotoluene ND 11 2.04 J 4-Chlorotoluene ND 11 2.04 J 1,3,5-Trimethylbenzene 3.5 11 1.95 J t-Butylbenzene 3.8 11 2.04 J 1,2,4-Trimethylbenzene 7.7 11 2.15 J sec-Butylbenzene ND 11 2.15 J 1,3-Dichlorobenzene ND 11 1.93 1,4-Dichlorobenzene ND 11 2.26 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11	Isopropylbenzene		2.5	11	1.9 J
1,1,2,2-Tetrachloroethane ND 11 2.16 1,2,3-Trichloropropane ND 11 2.45 n-Propylbenzene 5.8 11 1.99 J 2-Chlorotoluene ND 11 1.96 L		ND		11	
n-Propylbenzene 5.8 11 1.99 J 2-Chlorotoluene ND 11 1.96 J 4-Chlorotoluene ND 11 2.04 J 1,3,5-Trimethylbenzene 3.5 11 1.95 J t-Butylbenzene 3.8 11 2.04 J 1,2,4-Trimethylbenzene 7.7 11 2.15 J sec-Butylbenzene 7.3 11 2.15 J 1,3-Dichlorobenzene ND 11 1.93 1,4-Dichlorobenzene ND 11 2.26 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 1.78 n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.08 J Hexachlorobutadiene ND 11 2.08 J Hexachlorobutadiene ND 11 2.06	1,1,2,2-Tetrachloroethane	ND		11	2.16
n-Propylbenzene 5.8 11 1.99 J 2-Chlorotoluene ND 11 1.96 J 4-Chlorotoluene ND 11 2.04 J 1,3,5-Trimethylbenzene 3.5 11 1.95 J t-Butylbenzene 3.8 11 2.04 J 1,2,4-Trimethylbenzene 7.7 11 2.15 J sec-Butylbenzene 7.3 11 2.15 J 1,3-Dichlorobenzene ND 11 1.93 1,4-Dichlorobenzene ND 11 2.26 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 1.78 n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.31 J 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06	1,2,3-Trichloropropane	ND		11	2.45
2-Chlorotoluene ND 11 1.96 4-Chlorotoluene ND 11 2.04 1,3,5-Trimethylbenzene 3.5 11 1.95 J t-Butylbenzene 3.8 11 2.04 J 1,2,4-Trimethylbenzene 7.7 11 2.15 J sec-Butylbenzene 7.3 11 2.15 J 1,3-Dichlorobenzene ND 11 1.93 1,4-Dichlorobenzene ND 11 2.26 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 1.78 n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.17 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06	n-Propylbenzene		5.8	· 11	1.99 J
4-Chlorotoluene ND 11 2.04 1,3,5-Trimethylbenzene 3.5 11 1.95 J t-Butylbenzene 3.8 11 2.04 J 1,2,4-Trimethylbenzene 7.7 11 2.15 J sec-Butylbenzene 7.3 11 2.15 J 1,3-Dichlorobenzene ND 11 1.93 1,4-Dichlorobenzene ND 11 2.26 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 1.78 n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.31 J 1,2,4-Trichlorobenzene ND 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06		ND		11	
t-Butylbenzene 3.8 11 2.04 J 1,2,4-Trimethylbenzene 7.7 11 2.15 J sec-Butylbenzene 7.3 11 2.15 J 1,3-Dichlorobenzene ND 11 1.93 1,4-Dichlorobenzene ND 11 2.26 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 1.78 n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.17 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06	4-Chlorotoluene	ND		11	
t-Butylbenzene 3.8 11 2.04 J 1,2,4-Trimethylbenzene 7.7 11 2.15 J sec-Butylbenzene 7.3 11 2.15 J 1,3-Dichlorobenzene ND 11 1.93 1,4-Dichlorobenzene ND 11 2.26 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 1.78 n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.17 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06	1,3,5-Trimethylbenzene		3.5	11	1.95 J
1,2,4-Trimethylbenzene 7.7 11 2.15 J sec-Butylbenzene 7.3 11 2.15 J 1,3-Dichlorobenzene ND 11 1.93 1,4-Dichlorobenzene ND 11 2.26 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 1.78 n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.17 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06	· · ·				
sec-Butylbenzene 7.3 11 2.15 J 1,3-Dichlorobenzene ND 11 1.93 1,4-Dichlorobenzene ND 11 2.26 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 1.78 n n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.17 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06	•			11	
1,3-Dichlorobenzene ND 11 1.93 1,4-Dichlorobenzene ND 11 2.26 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 1.78 n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.17 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06					
1,4-Dichlorobenzene ND 11 2.26 4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 1.78 I n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.17 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06		ND			
4-Isopropyltoluene 7.6 11 2.16 J 1,2-Dichlorobenzene ND 11 1.78 n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.17 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06	-	ND			
1,2-Dichlorobenzene ND 11 1.78 n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.17 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06			7.6		
n-Butylbenzene 5.1 11 2.31 J 1,2-Dibromo-3-chloropropane ND 11 2.17 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06		ND		11	
1,2-Dibromo-3-chloropropane ND 11 2.17 1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06	· · · · · · · · · · · · · · · · · · ·		5.1		
1,2,4-Trichlorobenzene 2.4 11 2.08 J Hexachlorobutadiene ND 11 2.8 Naphthalene 19 11 2.06	•	ND			
HexachlorobutadieneND112.8Naphthalene19112.06			2.4		
Naphthalene 19 11 2.06		ND			
·		-	· 19		
	1,2,3-Trichlorobenzene	ND		11	2.32

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Client Name Ecology & Environment, Inc. Client ID: ST-4B Lab ID: 71868-02 Date Received: 4/8/98 Date Prepared: 4/10/98 4/10/98 Date Analyzed: % Solids 79.84 **Dilution Factor** 1

Volatile Organics by USEPA Method 5035/8260B Modified

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	111		75	154
Toluene-d8	100		65	141
Bromofluorobenzene	104		82	157

Sample results are on a dry weight basis.

	F	lesult		
Analyte	(ւ	ıg/kg)	PQL	MDL Flags
Dichlorodifluoromethane	ND		12	1.12
Chloromethane	ND		12	4.39
Vinyl Chloride	ND		12	1.29
Bromomethane	ND		12	1.68
Chloroethane	ND		. 12	4.43
Trichlorofluoromethane	ND		12	1.68
1,1-Dichloroethene	ND		12	2.42
1,1,2-Trichlorotrifluoroethane	ND		12	1.98
Acetone	ND		12	3.73
Methylene Chloride	ND		12	1.83
trans-1,2-Dichloroethene	ND		12	2.05
1,1-Dichloroethane	ND		12	1.27
2,2-Dichloropropane	ND		12	1.09
cis-1,2-Dichloroethene	ND		12	1.55
2-Butanone	ND		12	3.97
Bromochloromethane	ND		12	4.07
Chloroform	ND		12	3.64
1,1,1-Trichloroethane	ND		12	2.87
Carbon Tetrachloride	ND		12	1.92
1,1-Dichloropropene	ND		12	2.15
Benzene	ND		12	1.83
1,2-Dichloroethane	ND		12	1.82
Trichloroethene		6.6	12	2.42 J
1,2-Dichloropropane	ND		12	1.78
Dibromomethane	ND		12	2.03
Bromodichloromethane	ND		12	1.96 岁

Volatile Organics by USEPA Method 5035/8260B Modified data for 71868-02 continued...

Analyte		esult g/kg)	PQL	MDL
cis-1,3-Dichloropropene	ND (U	g/kg)	12	1.82
Toluene	110	4.1	12	2.2 J
4-Methyl-2-pentanone	ND	7.1	12	3.39
trans-1,3-Dichloropropene	ND		12	1.41
1,1,2-Trichloroethane	ND		12	1.76
Tetrachloroethene	140	4.5	12	2.1 J
1,3-Dichloropropane	ND	4.5	12	1.76
Dibromochloromethane	ND		12	1.55
1,2-Dibromoethane	ND		12	1.66
2-Hexanone	ND		12	1.74
Chlorobenzene	ND		12	1.94
1,1,1,2-Tetrachloroethane	ND		12	1.66
Ethylbenzene	ND		12	1.83
m,p-Xylene	ND		23	3.65
o-Xylene	ND		12	1.82
Styrene	ND		12	1.68
Bromoform	ND .		12	1.65
Isopropylbenzene	ND		12	1.9
Bromobenzene	ND		12	1.65
1,1,2,2-Tetrachloroethane	ND	•	12	2.16
1,2,3-Trichloropropane	ND		12	2.45
n-Propylbenzene	ND		12	1.99
2-Chlorotoluene	ND		12	1.96
4-Chlorotoluene	ND		12	2.04
1,3,5-Trimethylbenzene	ND		12	1.95
t-Butylbenzene	ND		12	2.04
1,2,4-Trimethylbenzene	ND		12	2.15
sec-Butylbenzene	ND		12	2.15
1,3-Dichlorobenzene	ND		12	1.93
1,4-Dichlorobenzene	ND		12	2.26
4-Isopropyltoluene	ND		12	2.16
1,2-Dichlorobenzene	ND		12	1.78
n-Butylbenzene	ND		12	2.31
1,2-Dibromo-3-chloropropane	ND		12	2.17
1,2,4-Trichlorobenzene	ND		12	2.08
Hexachlorobutadiene	ND		12	2.8
Naphthalene		3.9	12	2.06 J
1,2,3-Trichlorobenzene	ND		12	2.32



Client Name	Ecology & Environment, Inc.
Client ID:	ST-5
Lab ID:	71868-03
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	76.18
Dilution Factor	1

Volatile Organics by USEPA Method 5035/8260B Modified

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	108		75	154
Toluene-d8	102		65	141
Bromofluorobenzene	107		82	157

Sample results are on a dry weight basis.

Analyte		Result (ug/kg)	PQL	MDL	Flags
Dichlorodifluoromethane	ND	(ug/kg/	12	1.12	ı lags
Chloromethane	ND		12	4.39	
Vinyl Chloride	ND		. 12	1.29	
Bromomethane	ND		12	1.68	
Chloroethane	ND		12	4.43	
Trichlorofluoromethane	ND		12	1.68	
1,1-Dichloroethene	ND		12	2.42	
-	ND		12	1.98	
1,1,2-Trichlorotrifluoroethane	ND	20			
Acetone		20	12	3.73	
Methylene Chloride	ND	4.5	12	1.83	J
trans-1,2-Dichloroethene	ND		12	2.05	
1,1-Dichloroethane	ND		12	1.27	
2,2-Dichloropropane	ND		12	1.09	
cis-1,2-Dichloroethene	ND		12	1.55	
2-Butanone	ND		12	3.97	
Bromochloromethane	ND		12	4.07	
Chloroform	ND		12	3.64	
1,1,1-Trichloroethane	ND		12	2.87	
Carbon Tetrachloride	ND		12	1.92	
1,1-Dichloropropene	ND		12	2.15	
Benzene	ND		12	1.83	
1,2-Dichloroethane	ND		12	1.82	
Trichloroethene	ND		12	2.42	
1,2-Dichloropropane	ND		12	1.78	
Dibromomethane	ND		12	2.03	
Bromodichloromethane	ND		12	1.96	,
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Volatile Organics by USEPA Method 5035/8260B Modified data for 71868-03 continued...

		esult		
Analyte		ıg/kg)	PQL	MDL
cis-1,3-Dichloropropene	ND		12	1.82
Toluene		5.8	12	2.2 J
4-Methyl-2-pentanone	ND		12	3.39
trans-1,3-Dichloropropene	ND		12	1.41
1,1,2-Trichloroethane	ND		12	1.76
Tetrachloroethene	ND		12	2.1
1,3-Dichloropropane	ND		12	1.76
Dibromochloromethane	ND		12	1.55
1,2-Dibromoethane	ND		12	1.66
2-Hexanone	ND		12	1.74
Chlorobenzene	ND		12	1.94
1,1,1,2-Tetrachloroethane	ND		12	1.66
Ethylbenzene	ND		12	1.83
m,p-Xylene	ND		24	3.65
o-Xylene	ND		12	1.82
Styrene	ND		12	1.68
Bromoform	ND .	•	12	1.65
Isopropylbenzene	ND		12	1.9
Bromobenzene	ND		12	1.65
1,1,2,2-Tetrachloroethane	ND		12	2.16
1,2,3-Trichloropropane	ND		12	2.45
n-Propylbenzene	ND		12	1.99
2-Chlorotoluene	ND		12	1.96
4-Chlorotoluene	ND		12	2.04
1,3,5-Trimethylbenzene	ND		12	1.95
t-Butylbenzene	ND		12	2.04
1,2,4-Trimethylbenzene		4.7	12	2.15 J
sec-Butylbenzene	ND		12	2.15
1,3-Dichlorobenzene	ND		12	1.93
1,4-Dichlorobenzene	ND		12	2.26
4-Isopropyltoluene	ND		12	2.16
1,2-Dichlorobenzene	ND		12	1.78
n-Butylbenzene		5	12	2.31 J
1,2-Dibromo-3-chloropropane	ND		12	2.17
1,2,4-Trichlorobenzene	ND		12	2.08
Hexachlorobutadiene	ND		12	2.8
Naphthalene		2	12	2.06 J
1,2,3-Trichlorobenzene	ND		12	2.32



Client Name	Ecology & Environment, In
Client ID:	DW-1
Lab ID:	71868-04
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	78.68
Dilution Factor	1

Volatile Organics by USEPA Method 5035/8260B Modified

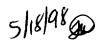
			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	109		75	154
Toluene-d8	98		65	141
Bromofluorobenzene	95		82	157

Sample results are on a dry weight basis.

	R	lesult			
Analyte	(u	ıg/kg)	PQL	MDL	Flags
Dichlorodifluoromethane	ND		11	1.12	
Chloromethane	ND		11	4.39	
Vinyl Chloride	ND		11	1.29	
Bromomethane	ND		11	1.68	
Chloroethane	ND		11	4.43	
Trichlorofluoromethane	ND		11	1.68	
1,1-Dichloroethene	ND		11	2.42	
1,1,2-Trichlorotrifluoroethane	ND		11	1.98	
Acetone	ND		11	3.73	
Methylene Chloride		3.6	11	1.83	J
trans-1,2-Dichloroethene	ND		11	2.05	
1,1-Dichloroethane	ND		11	1.27	
2,2-Dichloropropane	ND		11	1.09	
cis-1,2-Dichloroethene	ND		11	1.55	
2-Butanone	ND		11	3.97	
Bromochloromethane	ND		11	4.07	
Chloroform	ND		11	3.64	
1,1,1-Trichloroethane	ND.		11	2.87	
Carbon Tetrachloride	ND		11	1.92	
1,1-Dichloropropene	ND		11	2.15	
Benzene	ND		11	1.83	
1,2-Dichloroethane	ND		11	1.82	
Trichloroethene	ND		11	2.42	
1,2-Dichloropropane	ND		11	1.78	
Dibromomethane	ND		11	2.03	
Bromodichloromethane	ND		11	1.96	

Volatile Organics by USEPA Method 5035/8260B Modified data for 71868-04 continued...

		sult			
Analyte		ı/kg)	PQL	MDL	
cis-1,3-Dichloropropene	ND		11	1.82	
Toluene		4.3	11	2.2	J
4-Methyl-2-pentanone	ND		11	3.39	
trans-1,3-Dichloropropene	ND		11	1.41	
1,1,2-Trichloroethane	ND		11	1.76	
Tetrachloroethene		5.2	11	2.1	J
1,3-Dichloropropane	ND		11	1.76	
Dibromochloromethane	ND	,	11	1.55	
1,2-Dibromoethane	ND		11	1.66	
2-Hexanone	ND		11	1.74	
Chlorobenzene	ND		11	1.94	
1,1,1,2-Tetrachloroethane	ND		11	1.66	
Ethylbenzene	ND		11	1.83	
m,p-Xylene	ND		22	3.65	
o-Xylene	ND		11	1.82	
Styrene	ND	_	11	1.68	
Bromoform	ND .	•	11	1.65	
Isopropylbenzene	ND		11	1.9	
Bromobenzene	ND		11	1.65	
1,1,2,2-Tetrachloroethane	ND		11	2.16	
1,2,3-Trichloropropane	ND		11	2.45	
n-Propylbenzene	ND		11	1.99	
2-Chlorotoluene	ND		11	1.96	
4-Chlorotoluene	ND		11	2.04	
1,3,5-Trimethylbenzene	ND		11	1.95	
t-Butylbenzene	ND		11	2.04	
1,2,4-Trimethylbenzene	ND		11	2.15	
sec-Butylbenzene	ND		11	2.15	
1,3-Dichlorobenzene	ND		11	1.93	
1,4-Dichlorobenzene	ND		11	2.26	
4-Isopropyltoluene	ND		11	2.16	
1,2-Dichlorobenzene	ND		11	1.78	
n-Butylbenzene	ND		11	2.31	
1,2-Dibromo-3-chloropropane	ND		11	2.17	
1,2,4-Trichlorobenzene	ND		11	2.08	
Hexachlorobutadiene	ND		11	2.8	
Naphthalene	ND		11	2.06	
1,2,3-Trichlorobenzene	ND		11	2.32	



Client Name	Ecology & Environment, Inc.
Client ID:	BKG-1
Lab ID:	71868-05
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	86.3
Dilution Factor	1

Volatile Organics by USEPA Method 5035/8260B Modified

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	111		75	154
Toluene-d8	97		65	141
Bromofluorobenzene	94		82	157

Sample results are on a dry weight basis.

		Result					
Analyte		(ug/kg)		PQL		MDL	Flags
Dichlorodifluoromethane	ND			•	11	1.12	
Chloromethane	ND				11	4.39	
Vinyl Chloride	ND			,	11	1.29	
Bromomethane	ND				11	1.68	
Chloroethane	ND				11	4.43	
Trichlorofluoromethane	ND				11	1.68	
1,1-Dichloroethene	ND				11	2.42	
1,1,2-Trichlorotrifluoroethane	ND				11	1.98	
Acetone	ND			,	11	3.73	
Methylene Chloride			3.1		11	1.83	J
trans-1,2-Dichloroethene	ND				11	2.05	
1,1-Dichloroethane	ND			•	11	1.27	
2,2-Dichloropropane	ND				11	1.09	
cis-1,2-Dichloroethene	ND				11	1.55	
2-Butanone	ND				11	3.97	
Bromochloromethane	ND				11	4.07	
Chloroform	ND				11	3.64	
1,1,1-Trichloroethane	ND				11	2.87	
Carbon Tetrachloride	ND				11	1.92	
1,1-Dichloropropene	ND				11	2.15	
Benzene	ND				11	1.83	
1,2-Dichloroethane	ND				11	1.82	
Trichloroethene	ND				11	2.42	
1,2-Dichloropropane	ND				11	1.78	
Dibromomethane	ND				11	2.03	
Bromodichloromethane	ND				11	1.96	

Volatile Organics by USEPA Method 5035/8260B Modified data for 71868-05 continued...

	Re	suit		
Analyte	(ug	g/kg)	PQL	MDL
cis-1,3-Dichloropropene	ND		11	1.82
Toluene		3.7	11	2.2
4-Methyl-2-pentanone	ND		11	3.39
trans-1,3-Dichloropropene	ND		11	1.41
1,1,2-Trichloroethane	ND		11	1.76
Tetrachloroethene	ND		11	2.1
1,3-Dichloropropane	ND		11	1.76
Dibromochloromethane	ND		11	1.55
1,2-Dibromoethane	ND		11	1.66
2-Hexanone	ND		11	1.74
Chlorobenzene	ND		11	1.94
1,1,1,2-Tetrachloroethane	ND		11	1.66
Ethylbenzene	ND		11	1.83
m,p-Xylene	ND	•	22	3.65
o-Xylene	· ND		11	1.82
Styrene	ND		11	1.68
Bromoform	ND .	•	11	1.65
Isopropylbenzene	ND		11	1.9
Bromobenzene	ND		11	1.65
1,1,2,2-Tetrachloroethane	ND		11	2.16
1,2,3-Trichloropropane	ND		11	2.45
n-Propylbenzene	ND		11	1.99
2-Chlorotoluene	ND		11	1.96
4-Chlorotoluene	ND		11	2.04
1,3,5-Trimethylbenzene	ND		11	1.95
t-Butylbenzene	ND		11	2.04
1,2,4-Trimethylbenzene	ND		11	2.15
sec-Butylbenzene	ND		11	2.15
1,3-Dichlorobenzene	ND		11	1.93
1,4-Dichlorobenzene	ND		11	2.26
4-Isopropyltoluene	ND		11	2.16
1,2-Dichlorobenzene	ND		11	1.78
n-Butylbenzene	ND		11	2.31
1,2-Dibromo-3-chloropropane	ND		11	2.17
1,2,4-Trichlorobenzene	ND		11	2.08
Hexachlorobutadiene	ND		11	2.8
Naphthalene	ND		11	2.06
1,2,3-Trichlorobenzene	ND		11	2.32



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Client Name	Ecology & Environment, Inc.
Client ID:	ST-3D
Lab ID:	71868-08
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260

			Recovery Limit	
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	105		77	116
Toluene-D8	98		91	107
Bromofluorobenzene	96		92	109

	Result		
Analyte	(ug/L)	PQL	MDL Flags
Dichlorodifluoromethane	ND	0.4	0.04
Chloromethane	ND	0.4	0.07
Vinyl Chloride	ND	0.4	0.02
Bromomethane	ND	0.4	0.18
Chloroethane	ND	0.4	0.03
Trichlorofluoromethane	ND	0.4	0.02
1,1-Dichloroethene	ND	0.4	0.02
Methylene Chloride	ND	0.4	0.02
trans-1,2-Dichloroethene	ND	0.4	0.02
1,1-Dichloroethane	ND	0.4	0.03
2,2-Dichloropropane	ND	0.4	0.1
cis-1,2-Dichloroethene	ND	0.4	0.02
Bromochloromethane	ND	0.4	0.02
Chloroform	ND	0.4	0.02
1,1,1-Trichloroethane	ND	0.4	0.03
Carbon tetrachloride	ND	0.4	0.04
1,1-Dichloropropene	ND	0.4	0.07
Benzene	ND	0.4	0.09
1,2-Dichloroethane	ND	0.4	0.02
Trichloroethene	ND	0.4	0.02
1,2-Dichloropropane	ND	0.4	0.02
Dibromomethane	ND	· 0.4	0.02
Bromodichloromethane	ND	0.4	0.02
cis-1,3-Dichloropropene	ND	0.4	0.03
Toluene	ND	0.4	0.03
trans-1,3-Dichloropropene	ND	0.4	0.04

Volatile Organics by USEPA Method 5030/8260 data for 71868-08 continued...

	Re	sult		
Analyte	(ug	g/L)	PQL	MDL
1,1,2-Trichloroethane	ND	•	0.4	0.02
Tetrachloroethene	ND		0.4	0.02
1,3-Dichloropropane	ND		0.4	0.03
Dibromochloromethane	ND		0.4	0.02
1,2-Dibromoethane	ND		0.4	0.02
Chlorobenzene		6.6	0.4	0.03
1,1,1,2-Tetrachloroethane	ND		0.4	0.03
Ethylbenzene		0.52	0.4	0.03
m,p-Xylene	ND		0.8	0.05
o-Xylene	ND		0.4	0.03
Styrene	ND		0.4	0.03
Bromoform	ND		0.4	0.02
Isopropylbenzene	ND		0.4	0.03
Bromobenzene	ND		0.4	0.03
1,1,2,2-Tetrachloroethane	ND		0.4	0.03
1,2,3-Trichloropropane	ND		0.4	0.04
n-Propylbenzene	ND		0.4	0.03
2-Chlorotoluene	ND		0.4	0.03
1,3,5-Trimethylbenzene	ND		0.4	0.03
4-Chlorotoluene	ND		0.4	0.03
t-Butylbenzene	ND		0.4	0.03
1,2,4-Trimethylbenzene	ND		0.4	0.03
sec-Butylbenzene	ND		0.4	0.02
1,3-Dichlorobenzene	ND		0.4	0.04
4-Isopropyltoluene	ND		0.4	0.03
1,4-Dichlorobenzene	ND		0.4	0.03
1,2-Dichlorobenzene	ND		0.4	0.03
n-Butylbenzene	ND		0.4	0.03
1,2-Dibromo-3-chloropropane	ND		0.4	0.04
1,2,4-Trichlorobenzene	ND		0.4	0.04
Hexachlorobutadiene	ND		0.4	0.09
Naphthalene		0.69	0.4	0.03
1,2,3-Trichlorobenzene	ND	4	0.4	0.02



Client Name	Ecology & Environment, Inc.
Client ID:	ST-3E
Lab ID:	71868-11
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	•
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260

			Recovery Limits		
Surrogate	% Recovery	Flags	Low	High	
Dibromofluoromethane	101		77	116	
Toluene-D8	98		91	107	
Bromofluorobenzene	102		92	109	

Analyte	(ug/L)	PQL	MDL Flags
Dichlorodifluoromethane	ND	0.4	0.04
Chloromethane	ND	0.4	0.07
Vinyl Chloride	ND	0.4	0.02
Bromomethane	ND	0.4	0.18
Chloroethane	ND	0.4	0.03
Trichlorofluoromethane	ND	0.4	0.02
1,1-Dichloroethene	ND	0.4	0.02
Methylene Chloride	ND	0.4	0.02
trans-1,2-Dichloroethene	ND	0.4	0.02
1,1-Dichloroethane	ND	0.4	0.03
2,2-Dichloropropane	ND	0.4	0.1
cis-1,2-Dichloroethene	ND	0.4	0.02
Bromochloromethane	ND	0.4	0.02
Chloroform	ND	0.4	0.02
1,1,1-Trichloroethane	ND	0.4	0.03
Carbon tetrachloride	ND	0.4	0.04
1,1-Dichloropropene	ND	0.4	0.07
Benzene	ND	0.4	0.09
1,2-Dichloroethane	ND	0.4	0.02
Trichloroethene	ND	0.4	0.02
1,2-Dichloropropane	ND	0.4	0.02
Dibromomethane	ND	0.4	0.02
Bromodichloromethane	ND	0.4	0.02
cis-1,3-Dichloropropene	ND	0.4	0.03
Toluene	ND	0.4	0.03
trans-1,3-Dichloropropene	ND	0.4	0.04
			5/18/98/20

Volatile Organics by USEPA Method 5030/8260 data for 71868-11 continued...

	R	esult		
Analyte	(u	ıg/L)	PQL	MDL
1,1,2-Trichloroethane	ND	•	0.4	0.02
Tetrachloroethene	ND		0.4	0.02
1,3-Dichloropropane	ND		0.4	0.03
Dibromochloromethane	ND		0.4	0.02
1,2-Dibromoethane	ND		0.4	0.02
Chlorobenzene		0.89	0.4	0.03
1,1,1,2-Tetrachloroethane	ND		0.4	0.03
Ethylbenzene	ND		0.4	0.03
m,p-Xylene	ND		0.8	0.05
o-Xylene	ND		0.4	0.03
Styrene	ND		0.4	0.03
Bromoform	ND		0.4	0.02
Isopropylbenzene	ND		0.4	0.03
Bromobenzene	ND		0.4	0.03
1,1,2,2-Tetrachloroethane	ND		0.4	0.03
1,2,3-Trichloropropane	ND		0.4	0.04
n-Propylbenzene	ND .	•	0.4	0.03
2-Chlorotoluene	ND		0.4	0.03
1,3,5-Trimethylbenzene	ND		0.4	0.03
4-Chlorotoluene	ND		0.4	0.03
t-Butylbenzene	ND		0.4	0.03
1,2,4-Trimethylbenzene	ND		0.4	0.03
sec-Butylbenzene	ND		0.4	0.02
1,3-Dichlorobenzene	ND		0.4	0.04
4-Isopropyltoluene	ND		0.4	0.03
1,4-Dichlorobenzene	ND		0.4	0.03
1,2-Dichlorobenzene	ND		0.4	0.03
n-Butylbenzene	ND		0.4	0.03
1,2-Dibromo-3-chloropropane	ND		0.4	0.04
1,2,4-Trichlorobenzene	ND		0.4	0.04
Hexachlorobutadiene	ND	•	0.4	0.09
Naphthalene	ND		0.4	0.03
1,2,3-Trichlorobenzene	ND		0.4	0.02

5/18/98

Client Name	Ecology & Environment, Inc.
Client ID:	UST-1
Lab ID:	71868-14
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260

			Recovery Limits	
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	102		77	116
Toluene-D8	100		91	107
Bromofluorobenzene	101		92	109

	1	Result		•
Analyte	((ug/ L)	PQL	MDL Flags
Dichlorodifluoromethane	ND		0.4	0.04
Chloromethane	ND		0.4	0.07
Vinyl Chloride	ND		0.4	0.02
Bromomethane	ND		0.4	0.18
Chloroethane	ND		0.4	0.03
Trichlorofluoromethane	ND		0.4	0.02
1,1-Dichloroethene	ND		0.4	0.02
Methylene Chloride	ND		0.4	0.02
trans-1,2-Dichloroethene	ND		0.4	0.02
1,1-Dichloroethane	ND		0.4	0.03
2,2-Dichloropropane	ND		0.4	0.1
cis-1,2-Dichloroethene		1.3	0.4	0.02
Bromochloromethane	ND		0.4	0.02
Chloroform	ND		0.4	0.02
1,1,1-Trichloroethane	ND		0.4	0.03
Carbon tetrachloride	ND		0.4	0.04
1,1-Dichloropropene	ND		0.4	0.07
Benzene	ND		0.4	0.09
1,2-Dichloroethane	ND		0.4	0.02
Trichloroethene	ND		0.4	0.02
1,2-Dichloropropane	ND		0.4	0.02
Dibromomethane	ND		0.4	0.02
Bromodichloromethane	ND		0.4	0.02
cis-1,3-Dichloropropene	ND		0.4	0.03
Toluene	ND		0.4	0.03
trans-1,3-Dichloropropene	ND		0.4	0.04

5/18/98

Volatile Organics by USEPA Method 5030/8260 data for 71868-14 continued...

Result				
Analyte	(ug/L)	PQL	MDL	
1,1,2-Trichloroethane	ND	0.4	0.02	
Tetrachloroethene	ND	0.4	0.02	
1,3-Dichloropropane	ND	0.4	0.03	
Dibromochloromethane	ND	0.4	0.02	
1,2-Dibromoethane	ND	0.4	0.02	
Chlorobenzene	ND	0.4	0.03	
1,1,1,2-Tetrachloroethane	ND	0.4	0.03	
Ethylbenzene	ND	0.4	0.03	
m,p-Xylene	ND	8.0	0.05	
o-Xylene	ND	0.4	0.03	
Styrene	ND	0.4	0.03	
Bromoform	ND	0.4	0.02	
Isopropylbenzene	ND	0.4	0.03	
Bromobenzene	ND	0.4	0.03	
1,1,2,2-Tetrachloroethane	ND	0.4	0.03	
1,2,3-Trichloropropane	ND	0.4	0.04	
n-Propylbenzene	ND · ·	0.4	0.03	
2-Chlorotoluene	ND	0.4	0.03	
1,3,5-Trimethylbenzene	ND	0.4	0.03	
4-Chlorotoluene	ND	0.4	0.03	
t-Butylbenzene	ND	0.4	0.03	
1,2,4-Trimethylbenzene	ND	0.4	0.03	
sec-Butylbenzene	ND	0.4	0.02	
1,3-Dichlorobenzene	ND	0.4	0.04	
4-Isopropyltoluene	ND	0.4	0.03	
1,4-Dichlorobenzene	ND	0.4	0.03	
1,2-Dichlorobenzene	ND	0.4	0.03	
n-Butylbenzene	ND	0.4	0.03	
1,2-Dibromo-3-chloropropane	ND	0.4	0.04	
1,2,4-Trichlorobenzene	ND	0.4	0.04	
Hexachlorobutadiene	ND	0.4	0.09	
Naphthalene	ND	0.4	0.03	
1,2,3-Trichlorobenzene	ND	0.4	0.02	



Client Name Ecology & Environment, Inc. Client ID: TB-2-4/6/98 Lab ID: 71868-15 Date Received: 4/8/98 4/10/98 Date Prepared: 4/10/98 Date Analyzed: % Solids **Dilution Factor** 1

Volatile Organics by USEPA Method 5030/8260

			Recovery Limits	
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	103		77	116
Toluene-D8	99		91	107
Bromofluorobenzene	100		92	109

	F	Result			
Analyte		(ug/L)	PQL	MDL	Flags
Dichlorodifluoromethane	ND		0.4	0.04	
Chloromethane	ND		0.4	0.07	
Vinyl Chloride	ND		0.4	0.02	
Bromomethane	ND		0.4	0.18	•
Chloroethane	ND		0.4	0.03	
Trichlorofluoromethane	ND		0.4	0.02	•
1,1-Dichloroethene	ND		0.4	0.02	
Methylene Chloride	ND		0.4	0.02	
trans-1,2-Dichloroethene	ND		0.4	0.02	
1,1-Dichloroethane	ND		0.4	0.03	
2,2-Dichloropropane	ND		0.4	0.1	
cis-1,2-Dichloroethene	ND		0.4	0.02	
Bromochloromethane	ND		0.4	0.02	
Chloroform	ND		0.4	0.02	
1,1,1-Trichloroethane	ND		0.4	0.03	
Carbon tetrachloride	ND		0.4	0.04	
1,1-Dichloropropene	ND		0.4	0.07	
Benzene	ND		0.4	0.09	*
1,2-Dichloroethane	ND		0.4	0.02	
Trichloroethene	ND		0.4	0.02	
1,2-Dichloropropane	ND		0.4	0.02	
Dibromomethane	ND		0.4	0.02	
Bromodichloromethane	ND		0.4	0.02	
cis-1,3-Dichloropropene	ND		0.4	0.03	
Toluene	ND		0.4	0.03	
trans-1,3-Dichloropropene	ND		0.4	0.04	\sim
				5/18/98	(M)

Volatile Organics by USEPA Method 5030/8260 data for 71868-15 continued...

	Result		
Analyte	(ug/L)	PQL	MDL
1,1,2-Trichloroethane	ND	0.4	0.02
Tetrachloroethene	ND	0.4	0.02
1,3-Dichloropropane	ND	0.4	0.03
Dibromochloromethane	ND .	0.4	0.02
1,2-Dibromoethane	ND	0.4	0.02
Chlorobenzene	ND	0.4	0.03
1,1,1,2-Tetrachloroethane	ND	0.4	0.03
Ethylbenzene	ND	0.4	0.03
m,p-Xylene	ND	0.8	0.05
o-Xylene	ND	0.4	0.03
Styrene	ND	0.4	0.03
Bromoform	ND	0.4	0.02
Isopropylbenzene	ND	0.4	0.03
Bromobenzene	ND	0.4	0.03
1,1,2,2-Tetrachloroethane	ND	0.4	0.03
1,2,3-Trichloropropane	ND	0.4	0.04
n-Propylbenzene	ND · ·	0.4	0.03
2-Chlorotoluene	ND	0.4	0.03
1,3,5-Trimethylbenzene	ND	0.4	0.03
4-Chlorotoluene	ND	0.4	0.03
t-Butylbenzene	ND	0.4	0.03
1,2,4-Trimethylbenzene	ND	0.4	0.03
sec-Butylbenzene	ND	0.4	0.02
1,3-Dichlorobenzene	ND	0.4	0.04
4-Isopropyltoluene	ND .	0.4	0.03
1,4-Dichlorobenzene	ND	0.4	0.03
1,2-Dichlorobenzene	ND	0.4	0.03
n-Butylbenzene	ND	0.4	0.03
1,2-Dibromo-3-chloropropane	ND	0.4	0.04
1,2,4-Trichlorobenzene	ND	0.4	0.04
Hexachlorobutadiene	ND	0.4	0.09
Naphthalene	ND ·	0.4	0.03
1,2,3-Trichlorobenzene	ND	0.4	0.02



Client Name Ecology & Environment, Inc.
Client ID: EB-1
Lab ID: 71868-18

Date Received: 4/8/98

Date Prepared: 4/10/98

Date Analyzed: 4/10/98
% Solids Dilution Factor 1

Volatile Organics by USEPA Method 5030/8260

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	104		77	116
Toluene-D8	101		91	107
Bromofluorobenzene	102		92	109

	Result		
Analyte	(ug/L)	PQL	MDL Flags
Dichlorodifluoromethane	ND	0.4	0.04
Chloromethane	ND	0.4	0.07
Vinyl Chloride	ND	0.4	0.02
Bromomethane	ND	0.4	0.18
Chloroethane	ND	0.4	0.03
Trichlorofluoromethane	ND	0.4	0.02
1,1-Dichloroethene	ND	0.4	0.02
Methylene Chloride	ND	0.4	0.02
trans-1,2-Dichloroethene	ND	0.4	0.02
1,1-Dichloroethane	ND	0.4	0.03
2,2-Dichloropropane	ND	0.4	0.1
cis-1,2-Dichloroethene	ND	0.4	0.02
Bromochloromethane	ND	0.4	0.02
Chloroform	ND	0.4	0.02
1,1,1-Trichloroethane	ND	0.4	0.03
Carbon tetrachloride	ND	0.4	0.04
1,1-Dichloropropene	ND	0.4	0.07
Benzene	ND	0.4	0.09
1,2-Dichloroethane	ND	0.4	0.02
Trichloroethene	ND	0.4	0.02
1,2-Dichloropropane	ND	0.4	0.02
Dibromomethane	ND	0.4	0.02
Bromodichloromethane	ND	0.4	0.02
cis-1,3-Dichloropropene	ND	0.4	0.03
Toluene	ND	0.4	0.03
trans-1,3-Dichloropropene	ND	0.4	0.04

Volatile Organics by USEPA Method 5030/8260 data for 71868-18 continued...

	Result	•	
Analyte	(ug/L)	PQL	MDL
1,1,2-Trichloroethane	ND	0.4	0.02
Tetrachloroethene	ND	0.4	0.02
1,3-Dichloropropane	ND	0.4	0.03
Dibromochloromethane	ND	0.4	0.02
1,2-Dibromoethane	ND	0.4	0.02
Chlorobenzene	ND	0.4	0.03
1,1,1,2-Tetrachloroethane	ND	0.4	0.03
Ethylbenzene	ND	0.4	0.03
m,p-Xylene	ND	8.0	0.05
o-Xylene	ND	0.4	0.03
Styrene	ND	0.4	0.03
Bromoform	ND	0.4	0.02
Isopropylbenzene	ND	0.4	0.03
Bromobenzene	ND	0.4	0.03
1,1,2,2-Tetrachloroethane	ND	0.4	0.03
1,2,3-Trichloropropane	ND	0.4	0.04
n-Propylbenzene	ND	0.4	0.03
2-Chlorotoluene	ND	0.4	0.03
1,3,5-Trimethylbenzene	ND	0.4	0.03
4-Chlorotoluene	ND	0.4	0.03
t-Butylbenzene	ND .	0.4	0.03
1,2,4-Trimethylbenzene	ND	0.4	0.03
sec-Butylbenzene	ND	0.4	0.02
1,3-Dichlorobenzene	ND	0.4	0.04
4-Isopropyltoluene	. ND	0.4	0.03
1,4-Dichlorobenzene	ND	0.4	0.03
1,2-Dichlorobenzene	ND	0.4	0.03
n-Butylbenzene	ND	0.4	0.03
1,2-Dibromo-3-chloropropane	ND	0.4	0.04
1,2,4-Trichlorobenzene	ND	0.4	0.04
Hexachlorobutadiene	ND	0.4	0.09
Naphthalene	ND	0.4	. 0.03
1,2,3-Trichlorobenzene	ND	0.4	0.02

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Client Name	Ecology & Environment, Inc
Client ID:	ST-1A
Lab ID:	71868-19
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	88.45
Dilution Factor	1

Volatile Organics by USEPA Method 5035/8260B Modified

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	107		75	154
Toluene-d8	90		65	141
Bromofluorobenzene	83		82	157

Sample results are on a dry weight basis.

		Result				
Analyte		(ug/kg)	PQL		MDL	Flags
Dichlorodifluoromethane	ND			10	1.12	
Chloromethane	ND			10	4.39	
Vinyl Chloride	ND			10	1.29	
Bromomethane	ND			10	1.68	
Chloroethane	ND			10	4.43	
Trichlorofluoromethane	ND			10	1.68	
1,1-Dichloroethene	ND			10	2.42	
1,1,2-Trichlorotrifluoroethane	ND			10	1.98	
Acetone		2	20	10	3.73	J
Methylene Chloride	ND			10	1.83	
trans-1,2-Dichloroethene	ND			10	2.05	
1,1-Dichloroethane	ND			10	1.27	•
2,2-Dichloropropane	ND			10	1.09	
cis-1,2-Dichloroethene	ND			10	1.55	
2-Butanone	ND			10	3.97	
Bromochloromethane	ND			10	4.07	
Chloroform	ND			10	3.64	
1,1,1-Trichloroethane	ND			10	2.87	
Carbon Tetrachloride	ND			10	1.92	
1,1-Dichloropropene	ND			10	2.15	
Benzene	ND			10	1.83	
1,2-Dichloroethane	ND			10	1.82	
Trichloroethene	ND			10	2.42	
1,2-Dichloropropane	ND			10	1.78	
Dibromomethane	ND			10	2.03	
Bromodichloromethane	ND			10	1.96	(A)

5/18/98

Volatile Organics by USEPA Method 5035/8260B Modified data for 71868-19 continued...

	Result		
Analyte	(ug/kg)	PQL	MDL
cis-1,3-Dichloropropene	ND	10	1.82
Toluene	ND	10	2.2
4-Methyl-2-pentanone	ND	10	3.39
trans-1,3-Dichloropropene	ND	10	1.41
1,1,2-Trichloroethane	ND	10	1.76
Tetrachloroethene	ND	10	2.1
1,3-Dichloropropane	ND	10	1.76
Dibromochloromethane	ND	10	1.55
1,2-Dibromoethane	ND	10	1.66
2-Hexanone	ND	10	1.74
Chlorobenzene	ND	10	1.94
1,1,1,2-Tetrachloroethane	ND	. 10	1.66
Ethylbenzene	ND	10	1.83
m,p-Xylene	ND	20	3.65
o-Xylene	. ND	10	1.82
Styrene	ND	10	1.68
Bromoform	ND · ·	10	1.65
Isopropylbenzene	ND	10	1.9
Bromobenzene	ND	10	1.65
1,1,2,2-Tetrachloroethane	ND	10	2.16
1,2,3-Trichloropropane	ND	10	2.45
n-Propylbenzene	ND	10	1.99
2-Chlorotoluene	ND	10	1.96
4-Chlorotoluene	ND	10	2.04
1,3,5-Trimethylbenzene	ND	10	1.95
t-Butylbenzene	ND	10	2.04
1,2,4-Trimethylbenzene	ND	10	2.15
sec-Butylbenzene	ND	10	2.15
1,3-Dichlorobenzene	ND	10	1.93
1,4-Dichlorobenzene	ND	10	2.26
4-Isopropyltoluene	ND T	10	2.16
1,2-Dichlorobenzene	ND	10	1.78
n-Butylbenzene	ND	10	2.31
1,2-Dibromo-3-chloropropane	ND	10	2.17
1,2,4-Trichlorobenzene	ND	10	2.08
Hexachlorobutadiene	ND	10	2.8
Naphthalene	ND	10	2.06
1,2,3-Trichlorobenzene	ND	10	2.32



Client Name	Ecology & Environment, Inc
Client ID:	ST-1B
Lab ID:	71868-20
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	86.27
Dilution Factor	1

Volatile Organics by USEPA Method 5035/8260B Modified

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	107	•	75	154
Toluene-d8	87		65	141
Bromofluorobenzene	85		82	157

Sample results are on a dry weight basis.

Result		
(ug/kg)	PQL	MDL Flags
ND	10	1.12
ND	10	4.39
ND	10	1.29
ND	10	1.68
ND	10	4.43
ND	10	1.68
ND	10	2.42
ND	10	1.98
ND	10	3.73
ND	10	1.83
ND	10	2.05
ND	10	1.27
ND	10	1.09
ND	10	1.55
ND	10	3.97
ND	10	4.07
ND	10	3.64
ND	10	2.87
ND	10	1.92
ND	10	2.15
ND	10	1.83
ND	10	1.82
ND	10	2.42
ND	10	1.78
ND	10	2.03
ND	10	1.96
	(ug/kg) ND	(ug/kg) PQL ND 10 ND

Volatile Organics by USEPA Method 5035/8260B Modified data for 71868-20 continued...

	Result		
Analyte	(ug/kg)	PQL	MDL
cis-1,3-Dichloropropene	ND	10	1.82
Toluene	ND	10	2.2
4-Methyl-2-pentanone	ND	10	3.39
trans-1,3-Dichloropropene	ND	10	1.41
1,1,2-Trichloroethane	ND	10	1.76
Tetrachloroethene	ND	10	2.1
1,3-Dichloropropane	ND	10	1.76
Dibromochloromethane	ND	10	1.55
1,2-Dibromoethane	ND	10	1.66
2-Hexanone	ND	10	1.74
Chlorobenzene	ND	10	1.94
1,1,1,2-Tetrachloroethane	ND.	10	1.66
Ethylbenzene	ND	10	1.83
m,p-Xylene	ND	21	3.65
o-Xylene	ND	10 .	1.82
Styrene	ND	10	1.68
Bromoform	ND · ·	10	1.65
Isopropylbenzene	ND	10	1.9
Bromobenzene	ND	10	1.65
1,1,2,2-Tetrachloroethane	ND	10	2.16
1,2,3-Trichloropropane	ND	10	2.45
n-Propylbenzene	ND	10 -	1.99
2-Chlorotoluene	ND	10	1.96
4-Chlorotoluene	ND	10	2.04
1,3,5-Trimethylbenzene	ND	10	1.95
t-Butylbenzene	ND	10	2.04
1,2,4-Trimethylbenzene	ND	10	2.15
sec-Butylbenzene	ND	10	2.15
1,3-Dichlorobenzene	ND	10	1.93
1,4-Dichlorobenzene	ND	10	2.26
4-Isopropyltoluene	ND	10	2.16
1,2-Dichlorobenzene	ND	10	1.78
n-Butylbenzene	ND	10	2.31
1,2-Dibromo-3-chloropropane	ND	10	2.17
1,2,4-Trichlorobenzene	ND	10	2.08
Hexachlorobutadiene	ND	10	2.8
Naphthalene	ND	10	2.06
1,2,3-Trichlorobenzene	ND	10	2.32



Client Name	Ecology & Environment, Inc.
Client ID:	ST-2A
Lab ID:	71868-21
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	87.95
Dilution Factor	1

Volatile Organics by USEPA Method 5035/8260B Modified

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	120		75	154
Toluene-d8	98		65	141
Bromofluorobenzene	101		82	157

Sample results are on a dry weight basis.

		Result				
Analyte		(ug/kg)		PQL	MDL	Flags
Dichlorodifluoromethane	ND			10	1.12	
Chloromethane	ND			10	4.39	
Vinyl Chloride	ND			10	1.29	
Bromomethane	ND			10	1.68	•
Chloroethane	ND			10	4.43	
Trichlorofluoromethane	ND			10	1.68	
1,1-Dichloroethene	ND			10	2.42	
1,1,2-Trichlorotrifluoroethane	ND			10	1.98	
Acetone			15	10	3.73	J
Methylene Chloride			3.1	10	1.83	J
trans-1,2-Dichloroethene	ND		*	10	2.05	
1,1-Dichloroethane	ND			10	1.27	
2,2-Dichloropropane	ND			10	1.09	
cis-1,2-Dichloroethene	ND			10	1.55	
2-Butanone	ND			10	3.97	
Bromochloromethane	ND			10	4.07	
Chloroform	ND			10	3.64	
1,1,1-Trichloroethane	ND			10	2.87	
Carbon Tetrachloride	ND			10	1.92	•
1,1-Dichloropropene	ND			10	2.15	
Benzene	ND			10	1.83	
1,2-Dichloroethane	ND			10	1.82	
Trichloroethene	ND			10	2.42	
1,2-Dichloropropane	ND			10	1.78	
Dibromomethane	ND			10	2.03	
Bromodichloromethane	ND			10	1.96	

Volatile Organics by USEPA Method 5035/8260B Modified data for 71868-21 continued...

		Result		
Analyte		(ug/kg)	PQL	MDL
cis-1,3-Dichloropropene	ND		10	1.82
Toluene		3.2	10	2.2
4-Methyl-2-pentanone	ND		10	3.39
trans-1,3-Dichloropropene	ND		10	1.41
1,1,2-Trichloroethane	ND		10	1.76
Tetrachloroethene		4.1	10	2.1
1,3-Dichloropropane	ND		10	1.76
Dibromochloromethane	ND		10	1.55
1,2-Dibromoethane	ND		10	1.66
2-Hexanone	ND		10	1.74
Chlorobenzene	ND		10	1.94
1,1,1,2-Tetrachloroethane	ND		10	1.66
Ethylbenzene	ND		10	1.83
m,p-Xylene	ND		20	3.65
o-Xylene	ND		10	1.82
Styrene	ND		10	1.68
Bromoform	ND		10	1.65
Isopropylbenzene	ND		10	1.9
Bromobenzene	ND		10	1.65
1,1,2,2-Tetrachloroethane	ND		10	2.16
1,2,3-Trichloropropane	ND		10	2.45
n-Propylbenzene	ND		10	1.99
2-Chlorotoluene	ND		10	1.96
4-Chlorotoluene	ND		10	2.04
1,3,5-Trimethylbenzene	ND		10	1.95
t-Butylbenzene	ND		10	2.04
1,2,4-Trimethylbenzene	, ND		10	2.15
sec-Butylbenzene	ND		10	2.15
1,3-Dichlorobenzene	ND		10	1.93
1,4-Dichlorobenzene	ND		10	2.26
4-Isopropyltoluene	ND		10	2.16
1,2-Dichlorobenzene	ND		10	1.78
n-Butylbenzene	ND		10	2.31
1,2-Dibromo-3-chloropropane	ND		10	2.17
1,2,4-Trichlorobenzene	ND		10	2.08
Hexachlorobutadiene	ND		10	2.8
Naphthalene	ND		10	2.06
1,2,3-Trichlorobenzene	ND		10	2.32



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Client Name	Ecology & Environment, In			
Client ID:	ST-2B			
Lab ID:	71868-22			
Date Received:	4/8/98			
Date Prepared:	4/10/98			
Date Analyzed:	4/10/98			
% Solids	77.81			
Dilution Factor	1			

Volatile Organics by USEPA Method 5035/8260B Modified

Surrogate			Recov	ery Limits
	% Recovery	Flags	Low	High
Dibromofluoromethane	109		75	154
Toluene-d8	99		65	141
Bromofluorobenzene	94		82	157

Sample results are on a dry weight basis.

		Result			
Analyte		(ug/kg)	PQL	MDL	Flags
Dichlorodifluoromethane	ND		11	1.12	
Chloromethane	ND		11	4.39	
Vinyl Chloride	ND		11	1.29	
Bromomethane	ND		11	1.68	
Chloroethane	ND		11	4.43	
Trichlorofluoromethane	ND		. 11	1.68	
1,1-Dichloroethene	ND		11	2.42	
1,1,2-Trichlorotrifluoroethane	ND		11	1.98	
Acetone		17	11	3.73	5
Methylene Chloride		3.7	11	1.83	J
trans-1,2-Dichloroethene	ND		11	2.05	
1,1-Dichloroethane	ND		11	1.27	
2,2-Dichloropropane	ND		11	1.09	
cis-1,2-Dichloroethene	ND		11	1.55	
2-Butanone	ND		11	3.97	
Bromochloromethane	ND		11	4.07	
Chloroform	ND		11	3.64	
1,1,1-Trichloroethane	ND		11	2.87	
Carbon Tetrachloride	ND		11	1.92	
1,1-Dichloropropene	ND		11	2.15	
Benzene	ND		11	1.83	
1,2-Dichloroethane	ND		11	1.82	
Trichloroethene	ND		11	2.42	
1,2-Dichloropropane	ND		11	1.78	
Dibromomethane	ND		11	2.03	
Bromodichloromethane	ND		11	1.96	
Bromodomoromethane	ND		• •		

Volatile Organics by USEPA Method 5035/8260B Modified data for 71868-22 continued...

	Resu			
Analyte	(ug/kṛ	3)	PQL	MDL
cis-1,3-Dichloropropene	ND		11	1.82
Toluene	ND	2.6	11	2.2
4-Methyl-2-pentanone	ND		11	3.39
trans-1,3-Dichloropropene	ND		11	1.41
1,1,2-Trichloroethane	ND		11	1.76
Tetrachloroethene	ND		11	2.1
1,3-Dichloropropane	ND		11	1.76
Dibromochloromethane	ND		11	1.55
1,2-Dibromoethane	ND		11	1.66
2-Hexanone	ND		11	1.74
Chlorobenzene	ND		11	1.94
1,1,1,2-Tetrachloroethane	ND		11	1.66
Ethylbenzene	ND		11	1.83
m,p-Xylene	ND		23	3.65
o-Xylene	ND		11	1.82
Styrene	ND		11	1.68
Bromoform	ND · ·		11	1.65
Isopropylbenzene	ND		. 11	1.9
Bromobenzene	ND		11	1.65
1,1,2,2-Tetrachloroethane	ND		11	2.16
1,2,3-Trichloropropane	ND		11	2.45
n-Propylbenzene	ND		11	1.99
2-Chlorotoluene	ND		11	1.96
4-Chlorotoluene	ND		11 .	2.04
1,3,5-Trimethylbenzene	ND		11	1.95
t-Butylbenzene	ND		11	2.04
1,2,4-Trimethylbenzene	ND		11	2.15
sec-Butylbenzene	ND		11	2.15
1,3-Dichlorobenzene	ND		11	1.93
1,4-Dichlorobenzene	ND		11	2.26
4-Isopropyltoluene	ND		11	2.16
1,2-Dichlorobenzene	ND		• 11	1.78
n-Butylbenzene	ND		11	2.31
1,2-Dibromo-3-chloropropane	ND		11	2.17
1,2,4-Trichlorobenzene	ND		11	2.08
Hexachlorobutadiene	ND		11	2.8
Naphthalene	ND		11	2.06
1,2,3-Trichlorobenzene	ND		11	2.32

5/18/98 W

Client Name Ecology & Environment, Inc.
Client ID: ST-3A
Lab ID: 71868-26

Date Received: 4/8/98

Date Prepared: 4/10/98

Date Analyzed: 4/10/98
% Solids Dilution Factor 1

Volatile Organics by USEPA Method 5030/8260

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	102		77	116
Toluene-D8	100		91	107
Bromofluorobenzene	97		92	109

	Result		
Analyte	(ug/L)	PQL	MDL Flags
Dichlorodifluoromethane	ND	0.4	0.04
Chloromethane	ND	0.4	0.07
Vinyl Chloride	ND	0.4	0.02
Bromomethane	ND	0.4	0.18
Chloroethane	ND	0.4	0.03
Trichlorofluoromethane	ND .	0.4	0.02
1,1-Dichloroethene	ND	0.4	0.02
Methylene Chloride	ND	0.4	0.02
trans-1,2-Dichloroethene	ND	0.4	0.02
1,1-Dichloroethane	ND	0.4	0.03
2,2-Dichloropropane	ND	0.4	0.1
cis-1,2-Dichloroethene	ND	0.4	0.02
Bromochloromethane	ND	0.4	0.02
Chloroform	ND	0.4	0.02
1,1,1-Trichloroethane	ND	0.4	0.03
Carbon tetrachloride	ND	0.4	0.04
1,1-Dichloropropene	ND	0.4	0.07
Benzene	ND	0.4	0.09
1,2-Dichloroethane	ND	0.4	0.02
Trichloroethene	ND	0.4	0.02
1,2-Dichloropropane	ND	0.4	0.02
Dibromomethane	ND	0.4	0.02
Bromodichloromethane	ND	0.4	0.02
cis-1,3-Dichloropropene	ND	0.4	0.03
Toluene	ND	0.4	0.03
trans-1,3-Dichloropropene	ND	0.4	0.04

Volatile Organics by USEPA Method 5030/8260 data for 71868-26 continued...

	Result		
Analyte	(ug/L)	PQL	MDL
1,1,2-Trichloroethane	ND	0.4	0.02
Tetrachloroethene	ND	0.4	0.02
1,3-Dichloropropane	ND	0.4	0.03
Dibromochloromethane	ND	0.4	0.02
1,2-Dibromoethane	ND	0.4	0.02
Chlorobenzene	ND	0.4	0.03
1,1,1,2-Tetrachloroethane	ND	0.4	0.03
Ethylbenzene	ND	0.4	0.03
m,p-Xylene	ND	0.8	0.05
o-Xylene	ND	0.4	0.03
Styrene	ND	0.4	0.03
Bromoform	ND	0.4	0.02
Isopropylbenzene	ND	0.4	0.03
Bromobenzene	ND	0.4	0.03
1,1,2,2-Tetrachloroethane	ND	0.4	0.03
1,2,3-Trichloropropane	ND	0.4	0.04
n-Propylbenzene	ND · ·	0.4	0.03
2-Chlorotoluene	ND	0.4	0.03
1,3,5-Trimethylbenzene	ND	0.4	0.03
4-Chlorotoluene	ND	0.4	0.03
t-Butylbenzene	ND	0.4	0.03
1,2,4-Trimethylbenzene	ND	0.4	0.03
sec-Butylbenzene	ND	0.4	0.02
1,3-Dichlorobenzene	ND	0.4	0.04
4-Isopropyltoluene	ND	0.4	0.03
1,4-Dichlorobenzene	ND	0.4	0.03
1,2-Dichlorobenzene	ND	0.4	0.03
n-Butylbenzene	ND	0.4	0.03
1,2-Dibromo-3-chloropropane	ND	0.4	0.04
1,2,4-Trichlorobenzene	ND	0.4	0.04
Hexachlorobutadiene	ND .	0.4	0.09
Naphthalene	ND	0.4	0.03
1,2,3-Trichlorobenzene	ND	0.4	0.02



Sound \dot{A} NALYTICAL SERVICES, INC.

Client Name	Ecology & Environment, Inc
Client ID:	ST-3B
Lab ID:	71868-29
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	-
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260

			Recovery Limits		
Surrogate	% Recovery	Flags	Low	High	
Dibromofluoromethane	101		77	116	
Toluene-D8	98		91	107	
Bromofluorobenzene	102		92	109	

	Result		•
Analyte	(ug/L)	PQL	MDL Flags
Dichlorodifluoromethane	ND	0.4	0.04
Chloromethane	ND	0.4	0.07
Vinyl Chloride	ND	0.4	0.02
Bromomethane	ND	0.4	0.18
Chloroethane	ND	0.4	0.03
Trichlorofluoromethane	ND	0.4	0.02
1,1-Dichloroethene	ND	0.4	0.02
Methylene Chloride	ND .	0.4	0.02
trans-1,2-Dichloroethene	ND	0.4	0.02
1,1-Dichloroethane	ND	0.4	0.03
2,2-Dichloropropane	ND	0.4	0.1
cis-1,2-Dichloroethene	ND	0.4	0.02
Bromochloromethane	ND	0.4	0.02
Chloroform	ND	0.4	0.02
1,1,1-Trichloroethane	ND	0.4	0.03
Carbon tetrachloride	ND	0.4	0.04
1,1-Dichloropropene	ND	0.4	0.07
Benzene	ND	0.4	0.09
1,2-Dichloroethane	ND	0.4	0.02
Trichloroethene	ND	0.4	0.02
1,2-Dichloropropane	ND	0.4	0.02
Dibromomethane	ND	0.4	0.02
Bromodichloromethane	ND	0.4	0.02
cis-1,3-Dichloropropene	ND	0.4	0.03
Toluene	ND	0.4	0.03
trans-1,3-Dichloropropene	ND	0.4	0.04

Volatile Organics by USEPA Method 5030/8260 data for 71868-29 continued...

	Res	sult		
Analyte	(ug	3/L)	PQL	MDL
1,1,2-Trichloroethane	ND		0.4	0.02
Tetrachloroethene	ND		0.4	0.02
1,3-Dichloropropane	ND		0.4	0.03
Dibromochloromethane	ND		0.4	0.02
1,2-Dibromoethane	ND		0.4	0.02
Chlorobenzene		0.94	0.4	0.03
1,1,1,2-Tetrachloroethane	ND		0.4	0.03
Ethylbenzene	ND	•	0.4	0.03
m,p-Xylene	ND		8.0	0.05
o-Xylene	ND		0.4	0.03
Styrene	ND		0.4	0.03
Bromoform	ND		0.4	0.02
Isopropylbenzene	ND		0.4	0.03
Bromobenzene	ND		0.4	0.03
1,1,2,2-Tetrachloroethane	ND	•	0.4	0.03
1,2,3-Trichloropropane	ND		0.4	0.04
n-Propylbenzene	ND ·	•	0.4	0.03
2-Chlorotoluene	ND		0.4	0.03
1,3,5-Trimethylbenzene	ND		0.4	0.03
4-Chlorotoluene	ND		0.4	0.03
t-Butylbenzene	ND		0.4	0.03
1,2,4-Trimethylbenzene	ND		0.4	0.03
sec-Butylbenzene	ND		0.4	0.02
1,3-Dichlorobenzene	ND		0.4	0.04
4-Isopropyltoluene	ND		0.4	0.03
1,4-Dichlorobenzene	ND		0.4	0.03
1,2-Dichlorobenzene	ND		0.4	0.03
n-Butylbenzene	ND		0.4	0.03
1,2-Dibromo-3-chloropropane	ND		0.4	0.04
1,2,4-Trichlorobenzene	ND		0.4	0.04
Hexachlorobutadiene	ND		0.4	0.09
Naphthalene	ND		0.4	0.03
1,2,3-Trichlorobenzene	ND		0.4	0.02



Client Name	Ecology & Environment, Inc
Client ID:	ST-3C
Lab ID:	71868-32
Date Received:	4/8/98
Date Prepared:	· 4/10/98
Date Analyzed:	4/10/98
% Solids	
Dilution Factor	1

Volatile Organics by USEPA Method 5030/8260

			Kecov	ery Limits
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	102		77	116
Toluene-D8	98		91	107
Bromofluorobenzene	102		92	109

	Result	•	
Analyte	(ug/L)	PQL	MDL Flags
Dichlorodifluoromethane	ND	0.4	0.04
Chloromethane	ND	0.4	0.07
Vinyl Chloride	ND	0.4	0.02
Bromomethane	ND	0.4	0.18
Chloroethane	ND	0.4	0.03
Trichlorofluoromethane	ND	0.4	0.02
1,1-Dichloroethene	ND	0.4	0.02
Methylene Chloride	ND	0.4	0.02
trans-1,2-Dichloroethene	ND	0.4	0.02
1,1-Dichloroethane	ND	0.4	0.03
2,2-Dichloropropane	ND	0.4	0.1
cis-1,2-Dichloroethene	ND	0.4	0.02
Bromochloromethane	ND	0.4	0.02
Chloroform	ND	0.4	0.02
1,1,1-Trichloroethane	ND	0.4	0.03
Carbon tetrachloride	ND	0.4	0.04
1,1-Dichloropropene	ND	0.4	0.07
Benzene	ND	0.4	0.09
1,2-Dichloroethane	ND	0.4	0.02
Trichloroethene	ND	0.4	0.02
1,2-Dichloropropane	ND	0.4	0.02
Dibromomethane	ND	0.4	0.02
Bromodichloromethane	ND	0.4	0.02
cis-1,3-Dichloropropene	ND	0.4	0.03
Toluene	ND	0.4	0.03
trans-1,3-Dichloropropene	ND	0.4	0.04 (Ju)
			5/18/98 Ju
			Spor
			5/18M°

Volatile Organics by USEPA Method 5030/8260 data for 71868-32 continued...

		Result		
Analyte		(ug/L)	PQL	MÐL
1,1,2-Trichloroethane	ND		0.4	0.02
Tetrachloroethene	ND		0.4	0.02
1,3-Dichloropropane	ND		0.4	0.03
Dibromochloromethane	ND		0.4	0.02
1,2-Dibromoethane	ND		0.4	0.02
Chlorobenzene		0.7	0.4	0.03
1,1,1,2-Tetrachloroethane	ND		0.4	0.03
Ethylbenzene	ND		0.4	0.03
m,p-Xylene	ND		0.8	0.05
o-Xylene	ND		0.4	0.03
Styrene	ND		0.4	0.03
Bromoform	ND		0.4	0.02
Isopropylbenzene	ND		0.4	0.03
Bromobenzene	ND		0.4	0.03
1,1,2,2-Tetrachloroethane	ND		0.4	0.03
1,2,3-Trichloropropane	ND		0.4	0.04
n-Propylbenzene	ND		0.4	0.03
2-Chlorotoluene	ND	•	0.4	0.03
1,3,5-Trimethylbenzene	ND		0.4	0.03
4-Chlorotoluene	ND		0.4	0.03
t-Butylbenzene	ND -		0.4	0.03
1,2,4-Trimethylbenzene	ND		0.4	0.03
sec-Butylbenzene	ND		0.4	0.02
1,3-Dichlorobenzene	ND		0.4	0.04
4-Isopropyltoluene	ND		0.4	0.03
1,4-Dichlorobenzene	ND		0.4	0.03
1,2-Dichlorobenzene	ND		0.4	0.03
n-Butylbenzene	ND		0.4	0.03
1,2-Dibromo-3-chloropropane	ND		0.4	0.04
1,2,4-Trichlorobenzene	ND		0.4	0.04
Hexachlorobutadiene	ND		0.4	0.09
Naphthalene	ND		0.4	0.03
1,2,3-Trichlorobenzene	ND		0.4	0.02



 Client Name
 Ecology & Environment, Inc.

 Client ID:
 TB-1-4/6/98

 Lab ID:
 71868-33

 Date Received:
 4/8/98

 Date Prepared:
 4/10/98

 Date Analyzed:
 4/10/98

 % Solids

 Dilution Factor
 1

Volatile Organics by USEPA Method 5030/8260

			Recov	ery Limits
Surrogate	% Recovery	Flags	Low	High
Dibromofluoromethane	101		77	116
Toluene-D8	99		91	107
Bromofluorobenzene	101		92	109

Result												
Analyte	(ug/L)	PQL	MDL Flags									
Dichlorodifluoromethane	ND	0.4	0.04									
Chloromethane	ND	0.4	0.07									
Vinyl Chloride	ND	0.4	0.02									
Bromomethane	ND	0.4	0.18									
Chloroethane	ND	0.4	0.03									
Trichlorofluoromethane	ND	0.4	0.02									
1,1-Dichloroethene	ND	0.4	0.02									
Methylene Chloride	ND	0.4	0.02									
trans-1,2-Dichloroethene	ND	0.4	0.02									
1,1-Dichloroethane	ND	0.4	0.03									
2,2-Dichloropropane	ND	0.4	0.1									
cis-1,2-Dichloroethene	ND	0.4	0.02									
Bromochloromethane	ND	0.4	0.02									
Chloroform	ND	0.4	0.02									
1,1,1-Trichloroethane	ND	0.4	0.03									
Carbon tetrachloride	ND	0.4	0.04									
1,1-Dichloropropene	ND	0.4	0.07									
Benzene	ND ·	0.4	0.09									
1,2-Dichloroethane	ND	0.4	0.02									
Trichloroethene	ND	0.4	0.02									
1,2-Dichloropropane	ND	0.4	0.02									
Dibromomethane	ND	0.4	0.02									
Bromodichloromethane	ND	0.4	0.02									
cis-1,3-Dichloropropene	ND ·	0.4	0.03									
Toluene	ND	0.4	0.03									
trans-1,3-Dichloropropene	ND	0.4	0.04									



Volatile Organics by USEPA Method 5030/8260 data for 71868-33 continued...

		Result		
Analyte		(ug/L)	PQL	MDL
1,1,2-Trichloroethane	ND		0.4	0.02
Tetrachloroethene	ND	•	0.4	0.02
1,3-Dichloropropane	ND		0.4	0.03
Dibromochloromethane	ND		0.4	0.02
1,2-Dibromoethane	ND		0.4	0.02
Chlorobenzene	ND		0.4	0.03
1,1,1,2-Tetrachloroethane	ND		0.4	0.03
Ethylbenzene	ND		0.4	0.03
m,p-Xylene	ND		0.8	0.05
o-Xylene	ND		0.4	0.03
Styrene	ND		0.4	0.03
Bromoform	ND		0.4	0.02
Isopropylbenzene	ND		0.4	0.03
Bromobenzene	ND		0.4	0.03
1,1,2,2-Tetrachloroethane	ND		0.4	0.03
1,2,3-Trichloropropane	ND		0.4	0.04
n-Propylbenzene	ND		0.4	0.03
2-Chlorotoluene	ND		0.4	0.03
1,3,5-Trimethylbenzene	ND		0.4	0.03
4-Chlorotoluene	ND		0.4	0.03
t-Butylbenzene	ND		0.4	0.03
1,2,4-Trimethylbenzene	ND		0.4	0.03
sec-Butylbenzene	ND	•	0.4	0.02
1,3-Dichlorobenzene	ND		0.4	0.04
4-Isopropyltoluene	ND		0.4	0.03
1,4-Dichlorobenzene	ND		0.4	0.03
1,2-Dichlorobenzene	ND		0.4	0.03
n-Butylbenzene	ND		0.4	0.03
1,2-Dibromo-3-chloropropane	ND		0.4	0.04
1,2,4-Trichlorobenzene	ND		0.4	0.04
Hexachlorobutadiene	ND		0.4	0.09
Naphthalene	ND		0.4	0.03
1,2,3-Trichlorobenzene	ND		0.4	0.02
				5/18/98
				5/10/10

42

Office of Enforcement

CHAIN OF CUSTODY RECORD

75 Hawthorne Street San Francisco, California 94105

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PROJ. NO.	PROJECT	NAME			<u></u>					Τ,	/ _{&}	/ 6/	13/08/		
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75 Hawthorne Street San Francisco, California 94105

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CHAIN OF CUSTODY RECORD

1 7,1860

7

75 Hawthorne Street
San Francisco, California 94105

CHAIN OF CUSTODY RECORD

PROJ.	NO.	PROJEC	TNA	ME						,	7	7	7	////	\$	
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STA. NO.	DATE 1998	TIME	COMP.	GRAB	STATIO	ON LOCATION	TAINER	1/-	10%	S. Mark	A CONTROL	2 / L	BY K	A CONTROL		
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ST-Z		1445		X	ST-ZA		3.5	X			X		×			
ST-2		1451		X	5T-2B			×	X	X	×	7				
ST-3		1520		X	ST-3A	·	IXIL	_			ļ	X	,	NaDH	11×H2	
ST-3		1520		X	ST-3A		IXIL			X	考	2				
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3T-3		1525		X	ST-3B		4×401	48					X	* AS R	EQUESTO	CD IN CONTRACT U/
57-3		1530		X	5T-3C		24/20			X		X			LABOR	•
-ST-3		1530		X	ST-3C		IXIL		X							
51-3		1530		×	ST-3C		4×40 m	e X					X			
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Client:

Ecology & Environment, Inc.

Date: April 29, 1998

Project:

KJ9103 WDI Tank Assessment

Lab No.: 71868

SAMPLE EXTRACTION AND ANALYSIS

VOLATILE ORGANICS

Samples 71868-1 through 71868-5, 71868-19 through 71868-22 (soils) and 71868-8, 71868-11, 71868-14, 71868-15, 71868-18, 71868-26, 71868-29, 71868-32 and 71868-33 (liquids) were analyzed for volatile organics in accordance with EPA Method 8260. The soil samples were prepared and analyzed on 4-10-98. The liquid samples were prepared and analyzed on 4-10-98.

Sample 71868-14 was received at a pH of 7. Sample 71868-18 was received at a pH of 5.

All quality control was within the acceptance limits.

SEMIVOLATILE ORGANICS

Samples 71868-1 through 71868-5 and 71868-20 through 71868-22 (soils) were analyzed for semivolatile organics in accordance with EPA Method 8270. The samples were prepared and analyzed on 4-10-98.

All quality control was within the acceptance limits.

Instrument reading x final volume x dilution factor sample weight or volume x dry weight

PESTICIDES AND PCBs

Samples 71868-1 through 71868-5, 71868-19 through 71868-22 (soils) and 71868-7, 71868-10, 71868-13, 71868-17, 71868-25, 71868-28, and 71868-31 (liquids) were analyzed for pesticides and PCBs in accordance with EPA Method 8081. The soil samples were extracted on 4-15-98 analyzed on 4-18-98. The liquid samples were extracted on 4-13-98 and analyzed on 4-16-98.

Second column confirmation was performed. The values are flagged "C1" or "C2" as deemed appropriate.

The percent recovery of DCB (surrogate) in the method blank associated with the liquid samples failed low. Reanalysis exhibited similar results. Insufficient sample volume was available for reextraction and reanalysis.

All quality control was within the acceptance limits.

Extract concentration x extract volume x dilution factor
Sample volume or weight x percent solids

ANALYTICAL DATA REVIEW SUMMARY

Site Name:	WDI Tank Assessment	
Location:	Santa Fe Springs, California	
PAN No.:	0294-WDSF-XX	
TDD No.:	09-9803-0006	
Laboratory:	Sound Analytical Services, Inc.	
Sampling Date:	April 6, 1998	
Analytical Method:	9012	
Sample Matrix:	Water	

Sample No.	Sample I.D.	Laboratory I.D.
1	ST-3D	71868-06
2	ST-3E	71868-09
3	ST-3A	71868-23
4	ST-3B	71868-27
5	ST-3C	71868-30

Data Reviewer:	Trisha J. Woolslayer	DeishaJ.	Woolslayer	5/20/98
Chemist QA Reviewer: START PM Acceptance:				

METALS DATA VALIDATION WORKSHEET - SUMMARY

Repor	t No.:	71868					
Labor	Laboratory: Sound Analytical Services, Inc.						
Reviewer: Trisha J. Woolslayer							
Revie	w Date:	April 6, 1	998				
Analy	tical Method:	9012					
No. of	Samples	Water:	5	Solid:	· · · · · · · · · · · · · · · · · · ·	_ Other:	
Indicate	e with a YES or	NO whether	er each ite	m is within QC li	mits.		
1.	Holding Tim	es			Y		
2.	Matrix Spike	Spike Dup	licate		Y		
3.	Blanks	-		·	Y		
4.	Initial Calibr	ation			Y		
5.	Continuing (Calibration		•	Y		
6.	Laboratory (ple (LCS)	Y		
7.	ICP Interfere		- '	,	N/A	_	
8.	Compound (-	•	N/A		
9.	Method of Standard Addition (MSA)				N/A		
10.	ICP Serial Dilution				N/A		
11.	Quarterly IDLs and ICP Linear Ranges			anges	N/A		
12.	System Performance				Y		
13.	•				Y		
Other P	roblems/Comm	ents:	····				

METALS AND CYANIDE ANALYSES

DATA PACKAGE COMPLETENESS CHECKLIST

Checklist Code:	X	Included: no problems		
	*	Included: problems noted in review		
	0	Not Included and/or Not Available		
	NR	Not Required		
	RS	Provided As Re-submission		
,, ,,	· .•			
X Case N	Varrative			
Quality Control Su	ımmarı Dac	·kaga		
	-	ummary Sheets (Form I)		
$\frac{X}{X}$		and Continuing Calibration(Form IIA)		
$\frac{-n}{O}$		Standard Results (Form IIB)		
$\frac{-S}{X}$		ibration and Preparation Blank Results (Form III)		
$\frac{NR}{NR}$		Interference Check Sample (Form IV)		
$\frac{-XX}{X}$		ike Recovery Results (Form VA)		
$\frac{X}{X}$	 -	colicate Sample Results		
$\frac{X}{X}$		tory Control Sample Results (Form VII)		
$\frac{\lambda}{NR}$		rd Addition Results (Form VIII)		
- NR		rial Dilution (Form IX)		
$\frac{NR}{NR}$		nent Detection Limits: Quarterly (Form X)		
$\frac{NR}{NR}$		terelement Correction Factors (Form XI)		
XXX		near Ranges: Quarterly (Form XII)		
$\frac{X}{X}$		ation Log (Form 13)		
$\frac{X}{X}$		is Run Log (Form 14)		
	1 midiy 3	is ituil bog (I olim I 1)		
Raw QC Data Pac	kage Section	on		
X		of-Custody Records		
0		tation Reports		
\overline{X}		nstrument Printouts		
\overline{X}	Sample	Preparation Notebook Pages		

Logbook and Worksheet Pages Percent Solids Determination

X

I.	HO	LD	ING	TIMES
I.		L	1110	

Acceptable	X	Outside QC Limits	
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Samples were prepared and analyzed within applicable holding times except as noted under comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those sample fractions prepared or analyzed outside holding time requirements, the results have been qualified as estimated (J).

Cyanide 14 Days Hexavalent Chromium 24 hours
Mercury 28 Days All Other Metals 6 months

Comments:

II.	INITIAL	AND	CONTINUING	CALIBRATION	VERIFICATION
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Acceptable X Outside QC Limits

Except as flagged below, a calibration verification standard and blank were analyzed at the beginning of the analysis and after every tenth sample. For AA methods, ICV recoveries were within the range of 90-110%. Other recoveries were within applicable control limits (Mercury or Tin 80-120%; Other Metals 90-110%; Cyanide 85-115%) unless noted. Calibration QC failures result in qualification of associated data as estimated (J). Any sample results greater than 110% of the highest standard were also flagged "J." Calibration data which is unacceptably out of control (Mercury or Tin <65% or >135%; Other Metals <75% or >125%; Cyanide <70% or >130%) may result in rejection (R) of all associated data.

Comments:

IIIA. E	CRROR	DETER	MINA	TION
---------	-------	-------	------	------

X	Matrix Spike/Spike Duplicate Samples Analyzed
	No Spike Samples Analyzed

Matrix spike samples may be used for a qualitative indication of result bias and precision. Spike recoveries of less than 80% or greater than 120% may be sufficient cause to flag associated data as estimated (J). This is left to the professional judgement of the data validator.

Comments:

III B. METHOD PERFORMANCE

Check whether an aqueous LCS (Blank Spike) was analyzed for every 20 samples or one LCS per batch which ever was greater. Check also that on solid LCS was analyzed at least every month. The LCS recovery should be between 80-120%. If the recovery is 30-79% or >120% all positive data associated with this LCS is qualified as estimated (J). All negative data associated with the standard are also considered estimated (J) if the recovery is between 30-79%. If the LCS result is <30% all associated data are qualified as rejected (R).

Comments:

IV. BLANKS AND BACKGROUND SAMPLES

Acceptab	ble X Detection Limits Adjus	sted
The follow	ving blanks were analyzed:	
X	Preparation Blanks	Field Blanks
X	Calibration Blanks Background Samples	Rinsate Blanks
Any compound qualified as blank conce	priate blanks were analyzed at the propound detected in the sample and also det is non-detect (UJ) when the sample contentration (detection limit was recalculate amination is over acceptable levels, data	ected in any associated blank, must be ncentration is less than five-times the ed to be five-times the blank level). It
Comments	:	
No comme	nts.	

VI.	OVERALL	ASSESSMENT	OF DATA
7 1.	OTLIGILL	TOOLIOOMATIC	OI DAIL

OVERALL ASSESSMENT OF DATA	
On the basis of this review, the following determination has been made with overall data usability for the specified level.	regard to the
Acceptable X Accepted with Qualification Rejected	
Accepted data meet the minimum requirements for the following EPA data cates	gory:
ERS Screening Non-definitive with 10% Conformation by Definitive Methodology Definitive	X
Without Comprehensive Statistical Error Determination With Comprehensie Statistical error Determination	X
Any qualifications to individual sample analysis results are detailed in the section above or appear under the comments section below. In cases whe criteria are out of specification, it may be appropriate to further qualify the The data reviewer must use professional judgment and express concerns a on the data validity for each specific data package.	re several QC data usability.
Comments:	
No comments.	

ANALYTICAL DATA REVIEW APPENDIX A

DATA VALIDATION QUALIFIERS

The following list of data validation qualifiers may be used in this data review package:

- J The associated numerical value is an estimated quantity because the reported concentrations were less than the required detection limits or because quality control criteria were not met. N Presumptive evidence of presence of material. Presumptive evidence of the presence of the material at an estimated quantity. NJ The material was analyzed for, but not detected. The associated numerical value is U the sample detection limit or adjusted sample detection limit. UJ The material was analyzed for, but not detected. The reported detection limit is estimated because quality control criteria were not met. R The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable Recovery Not Determined (Optional). RND
- PND Precision Not Determined (Optional).

ANNOTATED DATA SUMMARY SHEETS

Hand-annotated copies of the Data Summary Sheets from the analytical data package follow. When appropriate, detection limits have been adjusted to reflect effects of relevant qualifications noted during the data review. Errors in the reporting of detected compound results will usually not be changed by hand. In these cases, the laboratory may be required to re-submit portions of the data package and any affected Data summary Sheets. Any additional quality control failures have been flagged using the above listed data validation qualifiers.

Pages of Annotated Data summary Sheets follow.

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Pages of Annotated Data summary Sheets follow.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (253)922-2310 - FAX (253)922-5047

Report To: Ecology & Environment

Date: April 20, 1998

Report On: Analysis of Liquid

Report No.: 71868

IDENTIFICATION:

Samples received on 04-08-98

Project: KJ98103 WDI Tank Assessment

ANALYSIS:

General Chemistry Units: mg/L

Lab Sample No. 71868-6 Client ID: ST-3D

Parameter Method Result POL

Cyanide EPA 9010 ND 0.01

Lab Sample No. 71868-9 Client ID: ST-3E

Parameter Method Result POL

Cyanide EPA 9010 ND 0.01

Lab Sample No. 71868-23 Client ID: ST-3A

Parameter Method Result POL

Cyanide EPA 9010 ND 0.01

ND - Not Detected

PQL - Practical Quantitation Limit

5/20/9K

Ecology & Environment

Project: KJ98103 WDI Tank Assessment

Report No. 71868 April 20, 1998

General Chemistry Units: mg/L

Lab Sample No. 71868-27	Client ID:	ST-3B
-------------------------	------------	-------

<u>Parameter</u>	<u>Method</u>	<u>Result</u>	POL
Cyanide	EPA 9010	ND	0.01

	Lab	Sample	No.	71868-30	Client II): ST-3	C
--	-----	--------	-----	----------	-----------	---------	---

<u>Parameter</u>	Method	<u>Result</u>	POL
Cyanide	EPA 9010	ND	0.01

ND - Not Detected

PQL - Practical Quantitation Limit



Of En Haw(e Stt CHAIN OF CUSTODY RECORD Silving the state of the state San Francisco, California 94105 Solution of the second of the PROJ. NO. **PROJECT NAME** J9103 WOI TANK ASSESSMENT NO. SAMPLERS: (Signature) OF REMARKS CON-**TAINERS** COMP STA. NO. DATE TIME STATION LOCATION ST-4 1559 ST-4A DX 1/2 DX XX XX XX 51-4 5T-4B 1608 ST-5 12×402 X 1630 2x407 X5 X50 X50 X50 DW-1 DO MS /MSD IF SUFFICIENT SAMPLE VOLUME 1617 JX405 KY XX XX 1650 BKG-1 BKG-1 ST-3 1545 ع ا برو <u>ST-3</u> 1545 4 X 40m 8X X 57-3 1545 <u>57-3</u> K, 1550 X. 2XIC51-3 1550 4x40m X X 57-3 1550 UST-1 Y As requested in contract w/ Sound Laboratory 1635 1151-1 1635 įX, UST-1 1635 6X40mPXV 1800 1 X40m Relinquished by: (Signature) Date / Time Received by: (Signature) Relinquished by: (Signature) Date / Time Received by: (Signature) 4/4/98/1200 FED-X Relinquished by: (Signature) Relinquished by: (Signature) Date / Time Received by: (Signature) Date / Time Received by: (Signature) Date / Time Received for Laboratory by: Date / Time Remarks Relinquished by: (Signature) 930Am FED-X B/L # 804733300967 Signature >VIMA Distribution: Original Accompanies Shipment; Copy to Coordinator (Field Files 5 ω

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HEGION 3

ENVIRONMENTAL PROTECTION AGENCY

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REGION 9

L...IN C. LUSTUL / RELUAD! Sah rrancisco, California 94105 THE STATE OF THE S PROJ. NO. **PROJECT NAME** KJ9103 WDI TANK ASSESSMENT NO. SAMPLERS: (Signature) OF Molum REMARKS CON-**TAINERS** STA. NO. DATE TIME STATION LOCATION 1998 4/6 ST-1 5T-1A 1420 2×40= ST-1B ST-1 1425 51-2 ST-2A 1445 ST-2 5T-2B 1451 ST-3 ST-3A Nast MAZIZ 1520 1×16, ST-3 1520 ST-3A 1×12 ST-3A 57-3 1520 1×12. × 6×40ml X 57-3 1520 5T-3A X NOH PH)12 ON 9010 ANALYSIS 37-3 1525 JXIL. 5T-3B ST-3 1525 X ST-3B 1×11_, 4×40ml X <u> 37-3</u> 1525 ST-33 * AS REQUESTED IN CONTRACT U/ ST-3 1530 5T-3C 2XILT. SOUND LABORATORY 5T-3 1530 ST-3C IXIL. 4×40 ml X ST-3C ST-3 1530 6/98 1B 1800 1×4000 X Relinquished by: (Signature) Received by: (Signature) Relinquished by: (Signature) Date / Time Received by: (Signature) 1200 Date / Time Received by: (Signature) Relinquished by: (Signature) Date / Time Received by: (Signature) Relinquished by: (Signature) Remarks FED-X B/L # 804733300967 Date / Time Date / Time Relinquished by: (Signature) Received fon Laboratory by: (Sign Stuce) 4/8/98 930Am sinua Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files \bigcirc J

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Office of Enforcement

75 Hawthorne Stroot

SOUND ANALYTICAL SERVICES, INC.

TOTAL METALS CONTINUED

The relative percent difference (RPD) values for barium, chromium and lead in the duplicate analysis of sample 71868-1 exceeded the quality control limits. The sample was renalalyzed with lead continuing to fall outside of the quality control limit.

The percent difference of cobalt in the serial dilution analysis of sample 71868-1 fell outside of the quality control limits.

The percent recoveries of antimony, mercury and silver in the matrix spike analysis of sample 71868-6 exceeded the quality control limits. The sample was reanalyzed with antimony and silver continuing to fall outside of the control limits. Matrix interference is indicated by the post digest percent recoveries.

All other quality control was within the acceptance limits.

The metals data for the liquid sample matrices is located behind the solid metals data in this package.

Instrument reading x final volume x dilution factor sample weight or volume x dry weight

CYANIDE

Samples 71868-6, 71868-9, 71868-23, 71868-27 and 71868-30 (liquids) were analyzed for total cyanide in accordance with EPA Method 9010. The samples were prepared and analyzed on 4-20-98.

All quality control was within the acceptance limits.

Instrument reading x 50ml (final volume) x dilution factor 50ml (sample volume)

ANALYTICAL DATA REVIEW SUMMARY

Site Name:	WDI Tank Assessment			
Location:	Santa Fe Springs, California			
PAN No.:	0294-WDSF-XX			
TDD No.:	09-9803-0006			
Laboratory:	Sound Analytical Services, Inc.			
Sampling Date:	April 6, 1998			
Analytical Method:	6010			
Sample Matrix:	Soil/Water Soil/Water			

Sample No.	Sample I.D.	Laboratory I.D.
1	BKG-1	71868-05
2	DW-1	71868-04
3	ST-1A	71868-19
4	ST-1B	71868-20
5	ST-2A	71868-21
6	ST-2B	71868-22
7	ST-4A	71868-01
8	ST-4B	71868-02
9	ST-5	71868-03
10	EB-1	71868-16
11	ST-3A	71868-24
12	ST-3B	71868-27
13	ST-3C	71868-30
14	ST-3D	71868-06
15	ST-3E	71868-09
16	UST-1	71868-12

Data Reviewer:	Trisha J. Woolslayer	sekha	1. Woolslaver	5/18/18
ChemistQA Reviewer: START PM Acceptance:			<i>-</i>	

METALS DATA VALIDATION WORKSHEET - SUMMARY

Repo	rt No.:	71868					
Labo	ratory:	Sound Analytical Services, Inc.					
Revie	wer:	Trisha J.	Woolslayer	r			
Revie	w Date:	May 12,	1998				
Analy	tical Method:	6010					
No. o	No. of Samples Water: 7 Solid:				9	Other:	
Indicat	e with a YES or	NO wheth	er each ite	m is within QC	limits.		
1.	Holding Tim	ies			Y		
2.	Matrix Spike	e/Spike Duj	plicate		*		
3.	Blanks				Y		
4 .	Initial Calibr	ation			Y		
5 .	Continuing (Calibration			Y		
6.	Laboratory Control Sample (LCS)				*		
7.	,				Y		
8.	•				Y		
9.	Method of S	tandard Ad	ldition (MS	SA)	N/A	<u> </u>	
10.	ICP Serial D	ilution			Y		
11.	Quarterly ID	Ls and ICE	P Linear Ra	inges	<u> </u>		
12.	System Performance		Y				
13. Overall Assessment				*			
Note: *	' = Some data q	ualified, so	me problen	ns noted in revi	iew.		
Other I	Problems/Comm	ents:					
							

METALS AND CYANIDE ANALYSES

DATA PACKAGE COMPLETENESS CHECKLIST

Checklist Code:	X Included: no problems * Included: problems noted in review O Not Included and/or Not Available NR Not Required RS Provided As Re-submission
X Case N	arrative
Quality Control Su $ \begin{array}{c} X \\ X \\$	Data Summary Sheets (Form I) Initial and Continuing Calibration(Form IIA) CRDL Standard Results (Form IIB) Calibration and Preparation Blank Results (Form III) ICP Interference Check Sample (Form IV) Spike Recovery Results (Form VA) Duplicate Sample Results Laboratory Control Sample Results (Form VII) Standard Addition Results (Form VIII) ICP Serial Dilution (Form IX) Instrument Detection Limits: Quarterly (Form X) ICP Interelement Correction Factors (Form XI) ICP Linear Ranges: Quarterly (Form XII) Preparation Log (Form 13) Analysis Run Log (Form 14)
Raw QC Data Pack X X X X X X X X	

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I.a	111		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	11.7	L.	1 117	m

Acceptable	X	Outside QC Limits	

Samples were prepared and analyzed within applicable holding times except as noted under comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those sample fractions prepared or analyzed outside holding time requirements, the results have been qualified as estimated (J).

Cyanide

14 Days

Hexavalent Chromium

24 hours

Mercury

28 Days

All Other Metals

6 months

Comments:

No comments.

II. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Acceptable X Outside QC Limits	
--------------------------------	--

Except as flagged below, a calibration verification standard and blank were analyzed at the beginning of the analysis and after every tenth sample. For AA methods, ICV recoveries were within the range of 90-110%. Other recoveries were within applicable control limits (Mercury or Tin 80-120%; Other Metals 90-110%; Cyanide 85-115%) unless noted. Calibration QC failures result in qualification of associated data as estimated (J). Any sample results greater than 110% of the highest standard were also flagged "J." Calibration data which is unacceptably out of control (Mercury or Tin <65% or >135%; Other Metals <75% or >125%; Cyanide <70% or >130%) may result in rejection (R) of all associated data.

Comments:

In the continuing calibration associated with the soil samples, Thallium recovery was outside QC limits (R = 87.8%). There were no reported positive results for Thallium. Therefore, no data were qualified.

IIIA.	ERR	OR :	DET	ERM	IINAT	LIO	N
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X	Matrix Spike/Spike Duplicate Samples Analyzed
	No Spike Samples Analyzed

Matrix spike samples may be used for a qualitative indication of result bias and precision. Spike recoveries of less than 80% or greater than 120% may be sufficient cause to flag associated data as estimated (J). This is left to the professional judgement of the data validator.

Comments:

The following compounds had spike recoveries associated with the soil samples outside QC limits.

Compound	Spike % Recovery
Lead	50.2% / 18.4%
Zinc	61.5%
Antimony	0.0%
Thallium	69.6% (Post Digestion Spike)

The following compounds had MS/MSD recoveries associated with the water samples outside QC limits.

Compound	Spike % Recovery
Antimony	2418 % / 3274%
Silver	66.5% / 61.0%

III B. METHOD PERFORMANCE

Check whether an aqueous LCS (Blank Spike) was analyzed for every 20 samples or one LCS per batch which ever was greater. Check also that on solid LCS was analyzed at least every month. The LCS recovery should be between 80-120%. If the recovery is 30-79% or >120% all positive data associated with this LCS is qualified as estimated (J). All negative data associated with the standard are also considered estimated (J) if the recovery is between 30-79%. If the LCS result is <30% all associated data are qualified as rejected (R).

Comments:

In the LCS associated with the soil samples, Antimony (%R = 187.9) and Arsenic (%R = 79.8) had recoveries outside QC limits.

In the LCS associated with the water samples, Antimony (%R = 74.7) had recovery outside QC limits.

These data are therefore qualified.

IV.	BLANKS	AND	BACK	GROUND	SAMPLI	ES
IV.	BLANKS	AND	BACK	GKUUND	SAMIPLI	Ľ

Accepta	ible A Detection	Limits Adjusted
The follo	wing blanks were analyzed:	
X	_ Preparation Blanks	Field Blanks
X	Calibration Blanks	Rinsate Blanks
	Background Samples	

The appropriate blanks were analyzed at the proper frequency except as noted below. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (UJ) when the sample concentration is less than five-times the blank concentration (detection limit was recalculated to be five-times the blank level). If blank contamination is over acceptable levels, data may be rejected (R).

Comments:

The following compounds were reported at levels above the IDL, but below the CRDL in the associated blanks. Based on the CRDL, no data were qualified.

Compound	ICB	ССВ	Soil	Water
Antimony	X		X	X
Cadmium	X		X	X
Selenium	X		X	X
Chromium		X	X	
Nickel		X	X	X
Vandium		X	X	X
Соррег		X		X

Ecology &	Environment	t, Inc.			
WDI Tank	Assessment,	Santa	Fe	Springs,	California

May 18, 1998 Project No. 201423-01

V.	ICP/AA	RELATED	QUALITY	CONTROL
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Acceptable	X	Accepted with Qualification	
Rejected			

ICP Analyses

Unless noted below, ICP Interference Check Samples had recoveries inside control limits (80-120%) and were analyzed at the beginning and the end of each run and at least twice every 8 hours. In cases where sample concentrations exceeded 50 times the instrument detection limit (IDL), a serial dilution was performed on one of each 20 samples of a similar matrix. The 5-fold dilution results should agree to within 10% of the original determination. Results which exceed this limit are qualified at the discretion of the reviewer.

Comments:

No comments.

VI. OVERALL ASSESSMENT OF DATA

On the basis of this review,	the following d	letermination h	as been mad	e with regard	to the
overall data usability for th	e specified level	l .			

Acceptable Rejected	Accepted with Qualification X	
Accepted data meet the	he minimum requirements for the following EPA data cates	gory:
ERS Screening Non-definitive with	th 10% Conformation by Definitive Methodology	
Definitive		<u>X</u>
-	hensive Statistical Error Determination sie Statistical error Determination	X

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

Comments:

- In the continuing calibration associated with the soil samples, Thallium recovery was outside QC limits (R = 87.8%). There were no reported positive results for Thallium. Therefore, no data were qualified.
- Several compounds were qualified due to spike recoveries outside QC limits.
- In the LCS associated with the soil samples, Antimony (%R = 187.9) and Arsenic (%R = 79.8) had recoveries outside QC limits. In the LCS associated with the water samples, Antimony (%R = 74.7) had recovery outside QC limits.
- Several compounds were reported at levels above the IDL, but below the CRDL in associated blanks for both the water and soil samples. Based on the CRDL, no data were qualified..

ANALYTICAL DATA REVIEW

APPENDIX A

DATA VALIDATION QUALIFIERS

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Pages of Annotated Data summary Sheets follow.

U.S. EPA - CLP

1 INORGANIC ANALYSES DATA SHEET

EPA	S	A	M	P	L	E	NO
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-							CM 43
b Name: SOU	IND_ANALYTICA	L_SERVICES	Contract: E	&E_			ST-4A
			A SAS No.			SD	G No.: ST-4A_
	water): SOIL						D: 71868-1
- evel (low/me	ed): LOW_	_		Da	te Rece	eive	d: 04/08/98
_Solids:	_83.	5					
	Concentration	Units (ug	/L or mg/kg dry	y w	eight):	MG	:/KG .
	CAS No.	Analyte	Concentration	С	Q	м	
		Aluminum_		-		NR	
		Antimony_	20.1			P_	
	7440-38-2 7440-39-3	Arsenic	17.9 82.7			P_ P_	
	7440-39-3		0.11			P-	
	7440-43-9		0.31			P_	
	7440-70-2					NR	
-	7440-47-3		23.3	-			
	7440-48-4	_	4.3	$ \overline{B} $		P	
	7440-50-8	Copper	24.1	1_1		P	:
	7439-89-6	Iron		[_]		NR	
	l l	Lead	48.9	1_1		P	J
		Magnesium		1-1		NR	
<u>.</u>		Manganese Mercury	0.09	اتا	 -	NR AV	
	7440-02-0		12.0	۱۲۱		P	
	7440-09-7			[-[NR	
-	7782-49-2		10.1	ប៊			•
		Silver	0.12			P_P	
	7440-23-5			\		NR	
-	7440-28-0	Thallium_	5.8			P_	
	7440-62-2	Vanadium_	22.7			P_	·,
	7440-66-6	Zinc	82.4	<u></u>		P_{	J WY
ine!	0000-00-0	Molybdenu	1.1		 	P_	5/18/19/1
olor Before:		Clari	ty Before:			Tex	ture:
olor After:		Clarit	ty After:			Art	ifacts:
omments:							
							
·							

FORM I - IN

ILM02.1

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EPA SAMPLE NO.

		INORGANIC A	ANALYSES DATA S	SHE	ET		
•		* 00001000	Contract: E	· E			ST-4B
			Contract: E8			l	I
ab Code: SAS_	Ca	se No.: N/	A SAS No.	: 7	1868_	SD	G No.: ST-4A_
crix (soil/w	ater): SOIL			La	b Sampl	le I	D: 71868-2
evel (low/med): LOW_	_		Da	te Rece	eive	d: 04/08/98
Jolids:	_79.	8					
Co	ncentration	Units (ug.	/L or mg/kg dry	y w	eight):	MG	/KG .
				П			
	CAS No.	Analyte	Concentration	C	Q	М	
	7429-90-5	Aluminum	<u></u>	- ·		NR	
	1	Antimony	22.0	บิ			
		Arsenic	6.9			P P	
	7440-39-3		111			P_	
~-		Beryllium	0.23		·	P_	
	7440-43-9		2.2			P ⁻	
	7440-70-2					NR	
	7440-47-3		15.8	[-[·			
	7440-47-3		5.6	ᇤ		P P	
		Copper	20.8			p-	
	7439-89-6	Iron	20.0	- -		NR	
	7439-89-6		50.0	 - -		P	1
				<u> </u>		NR	•
		Magnesium		[- ·	<u> </u>	NR	
~		Manganese	0.20	- -		AV	
•	7439-97-6 7440-02-0	Mercury		- -			
			14.5	- -		P	
		Potassium		<u> -</u> -		NR	•
	7782-49-2	1	50.8			P_ P_	
	7440-22-4	Silver	0.13	ַ ט			
	7440-23-5	Sodium	6.4	, , .		NR	
~-	7440-28-0	Thallium_				P_	
	7440-62-2	Vanadium_	31.0	- -		P	E _
	7440-66-6	Zinc	90.0	-		P_ 7	101 (11)
-	0000-00-0	Molybdenu	1.2	U		P_	5/18/98 500
lor Before:		Clari	ty Before:		-	Tex	ture:
nlor After:		Clari	ty After:			Art	ifacts:
omments:							

EPA	SAMPLE	NO.
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b Name: SOUND_ANALYTICAL_SERVICES Contract: E&E	T-5
Tab Code: SAS Case No.: N/A SAS No.: 71868_ SDG No.	.: ST-4A
ab Code: SAS cuse No N/N show No /1000_ specified	
trix (soil/water): SOIL_ Lab Sample ID: 7:	1868-3
Level (low/med): LOW Date Received: 04	4/08/98
_Solids: _76.2	
Concentration Units (ug/L or mg/kg dry weight): MG/KG	
CAS No. Analyte Concentration C O M	
CAS No. Analyte Concentration C Q M	
7429-90-5 Aluminum NR	
7440-36-0 Antimony 48.5 P	
7440-38-2 Arsenic 16.6 B P	
7440-39-3 Barium 232 P	
7440-41-7 Beryllium 0.55 B P	
7440-43-9 Cadmium 11.6 P	
7440-70-2 Calcium NR	
7440-47-3 Chromium 71.2 P	
7440-47-3 Chromium 71.2 P P P P P P P P P	
7440-50-8 Copper 499 P	
7439-89-6 Iron NR	
7439-92-1 Lead 142 P J	
7439-95-4 Magnesium NR	
7439-96-5 Manganese	
7439-97-6 Mercury 0.13 AV	
7440-02-0 Nickel 58.2 P	
7440-09-7 Potassium NR	
7782-49-2 Selenium	
7440-23-5 Sodium NR	
7440-28-0 Thallium 6.2 U P	
7440-62-2 Vanadium	
7440-66-6 Zinc9690 P J	1000
0000-00-0 Molybdenu 12.0 _ P_	5/18 PE
olor Before: Clarity Before: Texture:	
	
Color After: Clarity After: Artifact	
-omments:	

EPA	SAMPLE	NO.
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	~ ***********	CEDUICES	Contract. F:	.F		BKG-1
			Contract: E8			
ab Code: SAS_	Ca:	se No.: N/	A SAS No.:	: 7	1868_	SDG No.: ST-4A
trix (soil/wa	ater): SOIL	_		La	b Sampl	le ID: 71868-5
evel (low/med)): LOW	-		Da	te Rece	eived: 04/08/98
_Solids:	_86.	3				
Cor	ncentration	Units (ug	L or mg/kg dry	y w	eight):	MG/KG .
_						W.
	CAS No.	Analyte	Concentration		Q	М
	7429-90-5	Aluminum		- -		NR
-		Antimony	19.6	ן שוֹן י		P_
	7440-38-2	Arsenic				P
		Barium	310	~ .		P ⁻
-		Beryllium	0.40	ᆔ	[P_
		Cadmium	0.58	<u> </u>	 [P-
		Calcium_				NR
		Chromium_	34.4	- -		
		Cobalt	15.1			P_P
ı	7440-48-4	Copper	32.2	- -		P-
	7439-89-6	Iron		- -		NR
-	7439-89-6	Lead	142	- -		P_J
	2		14 <i>2</i>	- -		NR N
	7439-95-4	Magnesium		- -		NR
•	7439-96-5	Manganese	0.10	B		AV
		Mercury Nickel	20.9	Ρ]-		
	7440-02-0			- -		P_ NR
-	1	Potassium	E7 7	- -		
		Selenium_	57.7	 -		P_ P_
	7440-22-4	Silver	0.12	ַ ט	 [<u>v_</u>
		Sodium		<u>ប</u>		NR
•	7440-28-0	Thallium_		. ا ت		P_
	7440-62-2	Vanadium_	40.7	-		P
	7440-66-6	Zinc	151	_]-		P_ J
	0000-00-0	Molybdenu	3.7	В		P_ (18/98 W)
olor Before:	· 	Clarit	y Before:		•	Texture:
olor After:		Clari	y After:			Artifacts:
omments:						
			1001			

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-			- 1 1 - T			DW-1
			Contract: E8			1
ab Code: SAS_	Ca	se No.: N/A	A SAS No.:	: 7	1868_	SDG No.: ST-4A
trix (soil/w	ater): SOIL			Lá	ab Sampl	e ID: 71868-4
evel (low/med): LOW_	_		Dā	ate Rece	eived: 04/08/98
_Solids:	_78.	7				
Со	ncentration	Units (ug	/L or mg/kg dry	, v	veight):	MG/KG .
-	CAS No.	Analyte	Concentration	С	Q	М
_	7440-36-0		24.1	_ _		NR P_
	7440-38-2 7440-39-3		26.2 224 0.44	_		P_ P_ P_
	7440-43-9 7440-70-2	Cadmium Calcium	1.6			P_ NR
	7440-47-3 7440-48-4 7440-50-8	Chromium_ Cobalt Copper	52.9 12.6 43.3	 - 		P_ P_ P_
	7439-89-6	Iron Lead	13.3	_		NR P_ J
		Magnesium Manganese Mercury	. 0.92	_		NR NR AV
	7440-02-0 7440-09-7	Nickel	19.2	-		P_NR
	7782-49-2 7440-22-4	Selenium_ Silver	11.1 0.13			P_ P_ NR
	7440-23-5 7440-28-0 7440-62-2	Sodium Thallium_ Vanadium	6.4	ប៊		P_P
	7440-66-6	Zinc_ Molybdenu	157 2.5	— В		P_ 7
olor Before:	l	[]	 cy Before:	_		_ 5/16/100
			<u>—</u> —		-	Texture:
olor After:		Clarit	cy After:		-	Artifacts:
omments:						

FORM I - IN

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EPA SAMPLE	NO
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	n avatumtoa	r cenuiced	Contract: F	: r		5	ST-1A
			Contract: E			CDC 3	Io . Cm 43
ab Code: SAS_	Ca:	se No.: N/	A SAS No.:	: /1	868_	SDG I	NO.: ST-4A_
atrix (soil/w	ater): SOIL			Lab	Samp:	le ID:	71868-19
.evel (low/med				Dat	e Rec	eived:	04/08/98
- Solids:	_88.	4					
Со	ncentration	Units (ug	/L or mg/kg dry	y we	eight)	: MG/K	. ·
-	CAS No.	Analyte	Concentration	С	Q	М	
				_	· · · · · · · · · · · · · · · · · · ·		
-		Aluminum_	10.3	-		NR	
		Antimony_	19.3	<u> </u>		P_	
	7440-38-2	Arsenic_	3.1	ן"ן"		P_	
-	7440-39-3	Barium	42.0	<u></u>		P_	
		Beryllium Cadmium	$\begin{bmatrix} 0.11 \\ 0.30 \end{bmatrix}$	-		P	
						P_ NR	
-	7440-70-2 7440-47-3	Calcium Chromium	4.7	- -		P	
	7440-47-3	Cobalt	3.5	$\left \frac{1}{B}\right $		P-	
	7440-50-8	Copper	11.5			P_	
-	7439-89-6	Iron	11.5	- -		NR	
	7439-92-1	Lead	7.3	-		P_	
		Magnesium				NR	
		Manganese		-1-		NR	
•		Mercury	0.09	ט -		AV	
		Nickel	3.3			P	
		Potassium		[-		NR	•
,	1	Selenium	9.7	 -			
	3	Silver				P_ P	
	7440-23-5	Sodium		-		NR	
•	7440-28-0	Thallium	5.6	<u></u>		P	
	7440-62-2	Vanadium	11.1	-		P	
	7440-66-6	Zinc	22.5	_ -		P	\00
	0000-00-0	Molybdenu	1.0	<u></u>		P	5/18/98
olor Before:		Clarit	cy Before:		······································	Textur	re:
Color After:		Clarit	cy After:	····		Artifa	icts:
comments:							
	······································						·
							
							····

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		INORGANIC A	ANALYSES DATA S	SHEE'	T	, —	
. Namos COLIN	n anatumtes	I. GEDUICEG	Contract: E8	CE.		S	T-1B
						I	
b Code: SAS_	Ca	se No.: N/A	A SAS No.:	: 71	868_	SDG N	o.: ST-4A
trix (soil/w	ater): SOIL	_			_		71868-20
vel (low/med): LOW	_		Dat	e Rece	ived:	04/08/98
Solids:	_86.	3					
Со	ncentration	Units (ug	/L or mg/kg dry	y we	ight):	MG/KG	•
	CAS No.	Analyte	Concentration	С	Q	м	
				_ _		NR	
	l .	Aluminum_ Antimony	20.3				
		Arsenic	3.3	, ,		P_ P_ P_ P	
		Barium —	49.3			p	
		Beryllium	0.11			P	
	7440-43-9		0.32			P	
		Calcium		-		NR	
		Chromium	5.5	- -		P	
		Cobalt	3.8			P_ P_ NR	
	 	Copper	11.3	-		P	
	7439-89-6	Iron		1-1-	I:	NR	
	 	Lead	10.3	- -		PJ	
		Magnesium		- -		NR	
		Manganese		- <i>-</i>	1	NR	
	9	Mercury	.0.09	 -		AV	
	•	Nickel	3.5	—		P	
	7440-09-7					NR	
	7782-49-2		10.2	 		P	•
	7440-22-4	Silver	0.12			P	
	7440-23-5	Sodium				NR	
	7440-28-0	Thallium	5.9	דו		P	
	7440-62-2	Vanadium -	13.4			P	
	7440-66-6	Zinc	29.8	- -		P_ 3	لم .
	0000-00-0	Molybdenu	2.2	B		P_	118/98
	l	l		_ _	l.	l	שומ שומ
or Before:		Clarit	cy Before:		•	Textur	e:
lor After:		Clarit	ty After:			Artifa	cts:
mments:							

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~			1	•		EPA S	SAMPLE NO.
~~~		INORGANIC A	ANALYSES DATA S	SHE	EET		5T-2A
b Name: SOUN	D ANALYTICA	L SERVICES	Contract: E8	E_			51 ZA
			A SAS No.			SDG 1	No.: ST-4A_
trix (soil/wa	ater): SOIL	_		Lá	ab Samp	le ID:	71868-21
evel (low/med	): LOW_	_		Da	ate Rec	eived:	04/08/98
_Solids:	_87.	9					
Co	ncentration	Units (ug	/L or mg/kg dry	, v	weight)	: MG/K	<b>3</b>
		T			l		
	CAS No.	Analyte	Concentration	С	Q	M	
	7429-90-5	Aluminum		-	<del></del>	NR	
	1	Antimony	20.2	$\overline{\mathbf{U}}$	]	P_ P_ P_ P_	
		Arsenic	3.3			P	,
	7440-39-3		68.7			P	
-	7440-41-7	Beryllium		$\overline{B}$		P	
	7440-43-9		0.85			P	
		Calcium				NR	
_		Chromium_	11.2	-		P	
		Cobalt	3.6	B		P_  P_	
	7440-50-8	Copper	16.9			P_	
<del>-</del>	7439-89-6	Iron				NR	
		Lead	44.4	_		P	
		Magnesium		_		NR	
	I	Manganese		_		NR	
-		Mercury	. 0.08	บิ		AV	
		Nickel	10.5			P	
	7440-09-7	Potassium		_		NR	
-	7782-49-2	Selenium	10.1	Ū		P P	•
	7440-22-4	Silver	0.12	U			
	7440-23-5	Sodium				NR	
	7440-28-0	Thallium_	5.8	U		P_	6
	7440-62-2	Vanadium_	18.4			P_	<i>U</i> ,,
	7440-66-6	Zinc	69.5			P_ <b>5</b>	80/.
-	0000-00-0	Molybdenu	1.1	U		P_	5/K/AX G
olor Before:		Clari	ty Before:			'—' Textur	
olor After:		Clarit	ty After:		_	Artifa	acts:
omments:							

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Namos COUN	ъ አህአር የጥርሮል	ı. SFRVICES	Contract: E	E E		ST-2B	
			A SAS No.			SDG No.: S'	г-4A
trix (soil/w						le ID: 71868	
evel (low/med				Da	ate Rece	eived: 04/08	/98
GAGI (TOM) WEG							
Solids:	_77.	8					
Co	ncentration	Units (ug.	/L or mg/kg dr	Ϋ́	weight)	: MG/KG	
_	GAG No	Analuto	Congentration	_		M	
	CAS No.	Analyte	Concentration	١٢	Q	] ^M ]	
	7429-90-5	Aluminum		-		NR	
****	•	Antimony	21.5	บิ			•
		Arsenic	3.5		<u> </u>	P	
	1	Barium	264		l ————	P	
		Beryllium		B		P ⁻	
		Cadmium	2.0		l ———	P	•
	N N	Calcium				NR	
_		Chromium	26.1	-			
		Cobalt	12.0	-		P P	
	4	Copper	32.3	_		P	
		Iron		_	<del></del>	NR	
~		Lead	359	-	<del></del>	P_ <b>#</b>	
		Magnesium		-		NR	
		Manganese		-		NR	
		Mercury_	. 0.19	-		AV	
		Nickel	22.8	-		P_	
	7440-09-7	Potassium		-		NR	
	7782-49-2	Selenium	10.8	บิ		P	
	7440-22-4	Silver	0.13	U		P P	
· ·	7440-23-5	Sodium				NR	
_	7440-28-0	Thallium_	6.2	ับ		P_	
	7440-62-2	Vanadium_	33.5			P	~ (M)
	7440-66-6	Zinc	176			P_ <b>J</b>	'uk
w-	0000-00-0	Molybdenu	1.1	ប		P_	glag w
	I	\		<b>!</b> —	J	'—' (\)	,io
olor Before:		Clarit	cy Before:		_	Texture:	
color After:		Clarit	ty After:	_	_	Artifacts:	
omments:							
							<del></del>
		<del></del>				······································	

EPA SAMPLE NO.

		INORGANIC A	ANALISES DATA :	OUE	LI	. —	
	D ANAL MIT CA	, cenuicea	Contract. E	c E			ST-3D
ib Name: Soun	D_ANALYTICA	T_SEKAICES	Contract: E	x E	<del></del>	1	
ab Code: SAS_	Ca	se No.: N/	A SAS No.	: 7	1868_	SD	G No.: ST-3D_
trix (soil/w	ater): WATE	R		La	b Samp	le I	D: 71868-6
evel (low/med	l): LOW_	_		Da	te Rec	eive	d: 04/08/98
-Solids:	0.	0					
Со	ncentration	Units (ug	/L or mg/kg dry	y w	eight)	: UG	3/L_
-	CAS No.	Analyte	Concentration	С	Q	M	
~-	7429-90-5			-		NR	
	7440-36-0	Antimony_ Arsenic	182 29.5			P_ P_	
-	7440-39-3	Barium_ Beryllium				P_ P_	
	7440-43-9	Cadmium Calcium	2.8			P_ NR	
	7440-47-3	Chromium_Cobalt_	9.6	ע [		P_ P_ P_	
~	7440-50-8	Copper	16.6	$\lfloor _{\perp} \rfloor$		NR	
•	7439-95-4	Lead_ Magnesium	68.7			P_NR	
-	7439-97-6	Manganese Mercury Nickel	0.27 13.1	-   -		NR AV P	
-	7440-09-7	Potassium Selenium	91.7			NR P	
	7440-22-4 7440-23-5	Silver Sodium	1.1			P_ NR	
-	7440-28-0 7440-62-2	Thallium_ Vanadium	52.7 25.0			P P	
_	7440-66-6	Zinc Molybdenu	140 9.6			P P	
							5/18/98 @
olor Before:		Clarit	cy Before:			Tex	ture:
olor After:		Clarit	y After:	<del></del>		Art	ifacts:
omments:							

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EPA SAMPLE NO

		INORGANIC A	ANALYSES DATA S	SHE	ET	EFA SAMEDE NO.
						ST-3E
b Name: SOUN	D_ANALYTICA	L_SERVICES	Contract: E	E_		
b Code: SAS_	Ca	se No.: N/	A SAS No.:	: 7	1868_	SDG No.: ST-3D
trix (soil/w	ater): WATE	R		La	b Samp	le ID: 71868-9
vel (low/med	): LOW_	_		Da	te Rec	eived: 04/08/98
Solids:	0.	0				
Co	ncentration	Units (ug	/L or mg/kg dry	y w	eight)	: UG/L_
		Τ	<u> </u>	П		Γ-1
	CAS No.	Analyte	Concentration	c	Q	м
	7429-90-5	Aluminum		-	<del></del>	NR
	7440-36-0	Antimony	182	177		P_
		Arsenic_	29.5			P
		Barium	247			P
		Beryllium	1.0			P
		Cadmium	2.8			P
		Calcium		١٠١		NR
		Chromium	130	-		
	1	Cobalt	$\begin{bmatrix}130 \\ 2.3 \end{bmatrix}$	ᆔ		P_ P_
	7440-50-8	Copper	16.8			P_
		Iron				NR
	7439-92-1	Lead	99.2	핆		P
		Magnesium		<b>"</b>		NR
		Manganese	<del></del>	-1		NR NR
		Mercury	0.17	<u></u>		AV
		Nickel	82.9			P
		Potassium	02.9	- -		NR
		Selenium	91.7	I		
		Silver	1.1			P_ P
	7440-23-5	Sodium	·			NR NR
	7440-23-3	Thallium	52.7	-		P
	7440-28-0	Vanadium	12.8			P-
				P		P
	7440-66-6 0000-00-0	Zinc Molybdenu	250 9.6	.	<del></del>	
			9.6	<u>"</u>		P 5/18/98
or Before:		Clarit	y Before:			Texture:
or After:		Clarit	y After:			Artifacts:
nments:		•				

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EPA	SAMPLE	NO
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COUNTY COUNTY		i ephurene	Contract. D	יםי			UST-1
	<del>-</del>		Contract: E			1_	
ab Code: SAS_	Ca	se No.: N/	A SAS No.	: 7	1868_	SI	OG No.: ST-3D_
_trix (soil/w	ater): WATE	R		La	ab Samp	le 1	ID: 71868-12
evel (low/med	l): LOW_	<del>_</del>		Da	te Rec	eive	ed: 04/08/98
-Solids:	0.	0					
Co	ncentration	Units (ug	/L or mg/kg dry	YV	veight)	: UC	G/L_
	1	<u> </u>	<u> </u>			T	1
	CAS No.	Analyte	Concentration	c	Q	М	
	7429-90-5	Aluminum				NR	
		Antimony	182	;;		P	
	1	Arsenic	29.5			P-	
	•	Barium	135		<del></del>	P-	
_		Beryllium				P-	
	3	Cadmium	2.8			P-	
	7440-43-9	Calcium		۱۷۱	<del></del>	NR	
-	7440-70-2	Chromium	1.0	ا ۱٫٫٫		P	
	7440-47-3	Cobalt	1.6			P_	
	7440-48-4	Copper	$\begin{bmatrix} \\ 3.7 \end{bmatrix}$			P-	
<b>-</b>	7439-89-6	Iron	J3./	^		NR	
		Lead	68.7			P	
		Magnesium	^{00.} /	ا۷		NR	
		Manganese	<del></del>	-		NR NR	
•		Mercury	0.17	บิ		AV	
		Nickel	7.8	1			
•	•	Potassium	'.8			P_NR	
•		Selenium	91.7	,,			
	7440-22-4		1.1			P_P	
,		Sodium				NR	
-	7440-23-3		52.7	77		P	
	7440-28-0	Vanadium_	16.2			P-	
	7440-62-2	Zinc	7.2		<del></del>	P-	Lalada
	0000-00-0	Molybdenu	10.0			P-	5/18/14/10
-		Angeng	10.0	_		<u>-  </u>	111
olor Before:		Clarit	cy Before:			Тех	ture:
olor After:		Clarit	ty After:			Art	ifacts:
omments:							
<i>.</i>							

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-						
ib Name: SOUN	EB-1					
	-				8	SDG No.: ST-3D_
ab code. bab_		be not ny.				
itrix (soil/w	ater): WATE	R		Lab S	ample	D: 71868-16
evel (low/med	):	_		Date	Recei	lved: 04/08/98
Solids:	0.	0				
Со	ncentration	Units (ug	/L or mg/kg dry	y weig	ht):	UG/L_
•			r			<del></del> ,
	CAS No.	Analyte	Concentration	c Q	M	1
_	7420 00 5	NI com i more		-	-	<del></del>
	1	Aluminum_	182			IR
		Antimony_	29.5			<u> </u>
		Arsenic				<u></u>
•	•	Barium	26.8			
		Beryllium	1.0			S-
	•	Cadmium	5.9	^B		I
	1	Calcium_	3.0	<u> </u>		IR
	•	Chromium_			F	<u>;- </u>
	1	Cobalt	1.6			<u>,                                    </u>
		Copper	4.4			,—     <del> </del>
		Iron	68.7			IR
		Lead	08./			NR
		Magnesium	· <del></del>			
		Manganese Mercury	0.17			IR
		Nickel	4.7			NV
	7440-02-0		4./	<b>"</b>		ı <del>R</del>
	7782-49-2	1	91.7	<del></del>	P	1 <b>3</b> V
	7440-22-4		14.7		——  <u> </u>	j-  <b>J</b>
	7440-22-4	Sodium Sodium	14./	-		ıR
	7440-23-3	Thallium	52.7	<del></del>	P	
	7440-28-0	Vanadium_	$\begin{bmatrix}32.7 \\ 17.3 \end{bmatrix}$	<u>ام</u>	$ _{\mathbf{P}}^{\mathbf{P}}$	<u>,- </u>
	7440-62-2	Zinc	12.9		—   P	<u> </u>
	0000-00-0	Molybdenu	9.6			
		Andeur	9.0		_	= 5/18/98 (Ju)
olor Before:		Clarit	cy Before:		T	exture:
olor After:		Clarit	y After:		A	rtifacts:
omments:						
Ommentes.						

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	~~	71.17 777	, ,,,,

~						ST-3A
ib Name: SOUN	ID_ANALYTICA	L_SERVICES	Contract: E	& E		
ab Code: SAS_	Ca	se No.: N/	A SAS No.	: 71868_	_	SDG No.: ST-3D_
trix (soil/w	ater): WATE	R		Lab Sar	nple	ID: 71868-24
Level (low/med	l): LOW_	<del>-</del>		Date Re	ecei	ved: 04/08/98
- Solids:	0.	0				
Co	ncentration	Units (ug	/L or mg/kg dry	y weight	t):	UG/L_
		<del>,</del>		<del></del>		
	CAS No.	Analyte	Concentration	C Q	М	
_	7420 00 5	27		-	-	<u>_</u>
- <del>-</del>	7429-90-5	Aluminum_	102	דו	$- _{N}$	
	7440-36-0	Antimony_	182 48.8		P	
	7440-38-2	Arsenic			$- _{\mathbf{P}}^{\mathbf{P}}$	
	7440-39-3	Barium	39.7		- P	-
		Beryllium Cadmium			$- _{\mathbf{P}}^{\mathbf{P}}$	-
			2.8	''	-   P	
		Calcium Chromium	4.7	<del>=</del>		
	7440-47-3 7440-48-4	Cobalt Cobalt	1.6		_   P	-
	7440-50-8		15.3		$- _{\mathbf{P}}^{\mathbf{r}}$	-1
	7439-89-6	Copper	13.3		$- \frac{1}{N}$	
	7439-89-6	Lead	68.7			•
	7439-92-1		1 <del></del>		$-\begin{vmatrix} \mathbf{P} \\ \mathbf{N} \end{vmatrix}$	
	7439-95-4	Magnesium		<del>-</del>	$- _{N}$	
-		Manganese	0.17	<del>, ,</del>	$- _{\mathbf{A}}^{\mathbf{N}}$	J
		Mercury Nickel			$- \mathbf{P} $	
	7440-02-0		10.0			
~	7782-49-2		292	<u></u>		
			1.1		- P	
	7440-23-5	Sodium			Ni	
<b>-</b>	7440-28-0	Thallium	52.7	₊₊	$- \mathbf{P} $	
	7440-62-2	Vanadium Vanadium	14.8		$- _{\mathbf{P}}^{\mathbf{r}}$	-{
•	7440-66-6	Zinc	120		$- _{\mathbf{P}}^{\mathbf{r}}$	
	0000-00-0	Molybdenu	9.6	₊₊	$- _{\mathbf{P}}^{\mathbf{r}}$	
		Molybdend	9.0		_ _	-   5/18/98 (JW)
olor Before:		Clarit	ty Before:		Te	exture:
olor After:		Clarit	ty After:		A	rtifacts:
omments:						
			<u> </u>			
		···				

FORM I - IN

EPA SAMPLE NO.

		INORGANIC	HUALISES DAIR	JIL	لا نا ن	. —	
-							ST-3B
b Name: SOUN	ID_ANALYTICA	L_SERVICES	Contract: E	&E_			
ab Code: SAS_	Ca	se No.: N/	A SAS No.	: 7	1868_	SDG	No.: ST-3D_
trix (soil/w	vater): WATE	R		La	ab Samp	le ID	): 71868-27
evel (low/med	l): LOW_	_		Da	te Rec	eived	l: 04/08/98
-Solids:	0.	0					
Со	ncentration	Units (ug	/L or mg/kg dry	y w	veight)	: UG/	'L_
-		T	I				
	CAS No.	Analyte	Concentration	C	Q	М	
. <del></del>	7429-90-5	Aluminum	[	-		NR	
	7440-36-0	Antimony	182	اتتا		P_	
	7440-38-2	Arsenic	29.5			P-	
	7440-39-3	Barium	25.2			P_	•
-	7440-41-7					P_	
	•					P_	
	7440-70-2	Calcium		۱۲		NR	
-	7440-47-3	1	3.5	듭			
	7440-48-4	_				P P	
	7440-50-8	Copper	<del></del>			P-	
-	7439-89-6	Iron				NR	
	7439-89-6	Lead	68.7	;;		P	
	1	Magnesium	^{00.} /	'		NR	
	•	Manganese		-		NR	
•		Mercury	0.17	;;		AV	
		Nickel			<del></del>	P	
	7440-02-0	· —	7.4			NR	
-	7782-49-2		91.7	<del></del>		P	
		Silver	1.1			P-	
		Sodium		I٦I		NR	
•	7440-23-3	Thallium	52.7	77		P	
	7440-28-0	Vanadium	13.8			F-	
	7440-62-2	Zinc	72.4	В		P-	
	0000-00-0	Molybdenu	9.6	77		P_	
<b>.</b>		Morybdenu	9.0	_			5/18/98/30
olor Before:		Clarit	cy Before:			Text	ure:
olor After:	<del></del>	Clarit	y After:			Arti	facts:
omments:							
omments:							

FORM I - IN

EPA	SAMPLE	NO
-----	--------	----

_					ST-3C
b Name: SOUN	D_ANALYTICA	L_SERVICES	Contract: E	& E	
ab Code: SAS_	Ca	se No.: N/	A SAS No.	: 71868_	SDG No.: ST-3D_
trix (soil/w	ater): WATE	R		Lab Sampl	e ID: 71868-30
evel (low/med	): LOW	- <del>-</del>		Date Rece	eived: 04/08/98
-Solids:	0.	0			
Co	ncentration	Units (ug	/L or mg/kg dry	y weight):	UG/L_
<b>-</b>	CAS No.	Analyte	Concentration	C Q	м
<del></del>	7429-90-5	Aluminum_			NR
	7440-38-2	Antimony_ Arsenic_	182 47.5	В	P P
-	7440-41-7	Barium_ Beryllium	27.2 1.0	עו	P_ P_
_	7440-70-2	Cadmium Calcium	2.8		P_ NR
	7440-48-4	Chromium_ Cobalt	2.3	ט	P P
-	7440-50-8 7439-89-6	Copper	10.7		P_ NR
	7439-92-1 7439-95-4	Lead_ Magnesium	68.7		P_NR
-	7439-96-5 7439-97-6	Manganese Mercury	0.17	<u></u>	NR AV
	7440-02-0 7440-09-7	Nickel Potassium	18.2		P_ NR
•		Selenium_ Silver	91.7	<u>ט</u>	P_  P
-	7440-23-5 7440-28-0	Sodium	52.7		NR P_
	7440-62-2 7440-66-6	Vanadium_ Zinc	14.5	В	P
	0000-00-0	Molybdenu	9.6	<u>u</u>	P_ P_ < 18/98
olor Before:		Clarit	y Before:		—'
olor After:		Clarit	cy After:		Artifacts:
omments:					

71868

REGION 9

75 Hawthorne Street San Francisco, California 94105

Office of Enforce	nent .	CHAIN OF CUSTODY	RECORD	Sar	Francisco, California 94105
PROJ. NO. PROJECT	NAME TANK ASSESSMENT	NO.			
AMPLERS: (Signature)	> 1 Au	05		7.7.87	
STA. NO. DATE TIME	STATION LOCATION	CON- TAINERS			EMARKS
ST-4 4/6 1559	X ST-4A	>X4% X	2 <b>82</b> X	<b>X</b>	
7-4 1 1608	X ST-4B	2×40=1 (X )	\$ K X	<b>3</b> C25	
5T-5 1630	X ST-5	2×402. X 9	W XXX	<b>9</b> /35	
DW-1 1617	X 0W-1	2x402 X X	4 X3 X3		SUFFICIENT SAMPLE VO
1KG-1 1650	X BKG-1	SYY ZOYXC	2° X X X X X X X X X X X X X X X X X X X	X	
T-3 1545	X ST-3D	JXIL.	XS X		·
7-3 1595	X ST-3D		\$		
T-3 1545	X 5T-3D	4 X 40m &X		*Ke	
7-3   1550	X 57-3E	2×14	X≢ X		
7-3 1550	XST-3E	1×14 1	7		
7-3   1550	X ST-3E	4240m X		X	
ST-1 1635	X 45T-1	1x1L	X	* As requested	in contract w/
57-1 1635	X UST-1	1414 9	ي ا	Sound Labor	1
15T-1 1635	X UST-1	6x40n3X		X	
B 1 1800	X TB-2-4/4/98	1X40W X			
elinquisped by: (Signature)	Date / Time   Received by   4/4/98   1200   FED-X	r: (Signature) Reling	uished by: (Signatu	re) Date / Time Re	ceived by: (Signature)
elinquished by: (Signature)	Date / Time Received by	(: (Signature) Relinqu	ished by: (Signatu	ne) Date / Time Re	ceived by: (Signatura)
elinquished by: (Signature)	Date / Time Received for (Signature)		1   0   1	Remarks FED-X B/L # 80473330096	

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Cooles 182

75 Hawthorne Street

**CHAIN OF CUSTODY RECORD** San Francisco, California 94105 PROJECT NAME PROJ. NO. J9/03 NO. OF REMARKS CON-**TAINERS** TIME DATE STATION LOCATION 4/49/1700 EB-1700 1700 1800 * As requested in contract w/ Date / Time Date / Time Relinquished by: (Signature) Received by: (Signature) Relinquished by: (Signature) Received by: (Signature) 1200 FED-X Date / Time Relinquished by: (Signature) Date / Time Received by: (Signature) Relinquished by: (Signature) Received by: (Signature) Date / Time Received for Laboratory by: Date / Time Relinquished by: (Signature) Remarks FED-X 0/L # (Signatural-930Am siama 804733300967 Distribution: Original Accompanies Shipment; Copy to Coordinator) Field Files

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**REGION 9** 

75 Hawthorne Street San Francisco, California 94105

CHAIN OF CUSTODY RECORD PROJ. NO. PROJECT NAME 19103 WDI TANK ASSESSMENT NO. SAMPLERS: (Signature) OF REMARKS CON-**TAINERS** STA. NO. DATE TIME STATION LOCATION 1998 ST-5T-1A 2×40= 1420 ST-1B ST- 1 1425 X ST-Z ST-ZA 1445 5T-7-B VST-2 1451 X ST-3A 15T-3 1×11. NaDH HAZIZ 1520 ST-3 1520 X ST-3A 1×12 157-3 X ST-3A 1×12. 1520 × 6×40mlix ST-3 1520 5T-3A MADH AH) 12 ON 9010 ANALYSIS 1525 13T-3 ST-38 AXIL 1525 ST-3B ST-3 4×40ml X 157-3 ST-33 1525 * AS REQUESTED IN CONTRACT W/ X 157-3 1530 ST-3C 2X/LIT SOUND LABORATORY 1530 ST-3C -5T-3 1×1.1. 4x 40 ml X ST-3C X 55-3 1530 1×400 % 198 1800 Relinquished by: (Signature) Received by: (Signature) Date / Time Date / Time Relinquished by: (Signature) Received by: (Signature) FED-X 1200 Relinquished by: (Signature) Date / Time Received by: (Signature) Relinquished by: (Signature) Date / Time Received by: (Signature) Remarks FED-X B/L # 804733300967 Relinquished by: (Signature) Date / Time Received for Laboratory by: Date / Time (Sign Stuce) Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

### SOUND ANALYTICAL SERVICES, INC.

Client:

Ecology & Environment, Inc.

Date: April 28, 1998

Project:

KJ9103 WDI Tank Assessment

Lab No.: 71868

#### **GASOLINE RANGE ORGANICS**

Samples 71868-1, 71868-4 through 71868-5, 71868-19 and 71868-21 (soils) and 71868-8, 71868-11, 71868-14, 71868-18, 71868-29 and 71868-32 (liquids) were analyzed for gasoline range organics in accordance with EPA Method 8015 Modified. The soil sample were extracted on 4-16-98 and analyzed on 4-17-98. The liquid samples were prepared on 4-16-98 and analyzed on 4-17-98.

Sample 71868-14 was received with a pH of 6. Sample 71868-18 was received with a pH of 5.

All quality control was within the acceptance limits.

Waters quant value x dilution factor

Soils
quant. Value x dilution factor x 10 x 40
sample weight x percent solids

#### **DIESEL RANGE ORGANICS**

Samples 71868-1, 71868-3 through 71868-5, 71868-19 and 71868-21 (soils) were analyzed for diesel range organics in accordance with EPA Method 8015 Modified. Several liquid samples were noted on the chain of custody for diesel range organic analysis. Insufficient sample volume was submitted for the liquid analysis and therefor canceled. The soil samples were extracted on 4-20-98 and analyzed on 4-21-98.

The contaminant present in samples 71868-1, 71868-4, 71868-5 and 71868-21 did not appear to be typical diesel range product. The elution pattern suggests that it may be heavy oil.

The contaminant present in sample 71868-3 did not appear to be typical diesel range product.

All quality control was within the acceptance limits.

Instrument reading x final volume x dilution factor sample weight or volume x dry weight

### **TOTAL METALS**

Samples 71868-1 through 71868-5, and 71868-19 through 71868-22 (soils) and 71868-6, 71868-9, 71868-12, 71868-16, 71868-24, 71868-27 and 71868-30 (liquids) were analyzed for CA metals in accordance with EPA Methods 7470/7471/6010. The soil samples were digested on 4-9-98 and 4-13-98 and analyzed on 4-10-98 and 4-13-98. The liquid samples were digested and analyzed on 4-10-98.

The percent recoveries of antimony, lead and zinc in the matrix spike analyses of sample 71868-1 exceeded the control limits. The sample was reanalyzed with similar results. Matrix interference is indicated by the post digest spike percent recoveries.

### SOUND ANALYTICAL SERVICES, INC.

### TOTAL METALS CONTINUED

The relative percent difference (RPD) values for barium, chromium and lead in the duplicate analysis of sample 71868-1 exceeded the quality control limits. The sample was renalalyzed with lead continuing to fall outside of the quality control limit.

The percent difference of cobalt in the serial dilution analysis of sample 71868-1 fell outside of the quality control limits.

The percent recoveries of antimony, mercury and silver in the matrix spike analysis of sample 71868-6 exceeded the quality control limits. The sample was reanalyzed with antimony and silver continuing to fall outside of the control limits. Matrix interference is indicated by the post digest percent recoveries.

All other quality control was within the acceptance limits.

The metals data for the liquid sample matrices is located behind the solid metals data in this package.

Instrument reading x final volume x dilution factor sample weight or volume x dry weight

### **CYANIDE**

Samples 71868-6, 71868-9, 71868-23, 71868-27 and 71868-30 (liquids) were analyzed for total cyanide in accordance with EPA Method 9010. The samples were prepared and analyzed on 4-20-98.

All quality control was within the acceptance limits.

Instrument reading x 50ml (final volume) x dilution factor 50ml (sample volume)

### ANALYTICAL DATA REVIEW SUMMARY

WDI Tank Assessment
Santa Fe Springs, California
0294-WDSF-XX
09-9803-0006
Sound Analytical Services, Inc.
April 6, 1998
8270
soil

Sample No.	Sample I.D.	Laboratory I.D.
1	ST-4A	71868-01
2	ST-4B	71868-02
3	ST-5	71868-03
4	DW-1	71868-04
5	BKG-1	71868-05
6	ST-1A	71868-19
7	ST-1B	71868-20
8	ST-2A	71868-21
9	ST-2B	71868-22

Data Reviewer:	Trisha J. Woolslayer	Seisha	J Woolslager	5/18/9
Chemist QA Reviewer:		-	J J	
START PM Acceptance:				

### GC/MS METHODS DATA VALIDATION WORKSHEET – SUMMARY

Reviewer: Review Date: Analytical Method:					
No. of Samples		Water:	Solid:	9	Other:
Indicat	e with a YES or	NO whether each	item is within QC	limits.	
1.	Holding Tim	es		Y	
2.	Surrogate R	ecovery		<u> </u>	
3.	Matrix Spike	e/Spike Duplicate		*	<del></del>
4.	Blanks			<u> </u>	
5.	Initial Calibration Continuing Calibration			*	
6.				<u> </u>	····
7.	Internal Stan			<u> </u>	
8.	GC/MS Tun	e Performance		Y	
9.	•	dentification		Y	<del></del>
10.	Compound (	-		Y	
11.	TIC Identific			<u> </u>	
12.	System Perfo			Y	
13.	Overall Asse	essment		*	<del></del>
on the	chain-of-custody	y. No data for dup		led. CLP Su	ves used were not reported immary forms were not

### GC/MS VOLATILE AND SEMI-VOLATILE ANALYSES

### DATA PACKAGE COMPLETENESS CHECKLIST

Checklist Code:	X	Included: no problems
	*	Included: problems noted in review
	0	Not Included and/or Not Available
	NR	Not Required
	RS	Provided As Re-submission

X Case Narrative

### Quality Control Summary Package

X	Data Summary Sheets (Form I)
X	Surrogate Recovery Summary (Form II)
X	Matrix Spoke/Spike Duplicate Recoveries (Form III)
X	Method Blank Summaries (Form IV)
X OB	GC/MS Tuning and Mass Calibration (Form V)
X.00	initial Calibration Data (Form VI)
X -0 15/15/	©Continuing Calibration Data (Form VII)
X Ors	Internal Standard Area Summary (Form VIII)
6/3/9	<b>y</b>

### Sample and Blank Data Package Section

X	Reconstructed Ion Current (RIC) Chromatogram
X	Quantation Reports
X	Quantitation Diagnostic Reports
X	Raw and Enhanced Mass Spectra
X	Reference Mass Spectra for Target Compounds
X	EPA/NIH Mass Spectral Library Search for TICs

### Raw QC Data Package Section

X	DFTPP and/or BFB mass spectra and mass listings
X	RIC Chromatogram for Standards and MS/MSD Samples
X	Quantitation Reports for Standards and MS/MSD
0	List of Instrument Detection Limits
X	Chain-of-Custody Records
X	Sample Preparation and Analysis Run Logs
X	Other (i.e. calculation examples)

T	TIAT	DIMO	TIMES
	мон	JULIA	

Acceptable	X	Outside QC Limits	•

Samples were prepared and analyzed within required holding times except as noted under Comments. In addition, no problems were identified with regard to sample preservation or custody unless specified. For those sample fractions prepared or analyzed outside holding time requirements, the results have been qualified as estimated (J).

Water Samples:

VOA - 7 days for analysis

BNA - 7 days for extraction, 40 days for analysis

Soil or Other Matrices:

VOA - 14 days for analysis

BNA - 14 days for extraction, 40 days for analysis

Comments:

Acceptable X Outside QC Limits

Unless noted below, GC/MS Tuning Compounds (BFB for VOA; DFTPP for BNA) have been analyzed every 12 hours and met ion abundance requirements. (See SW846 Method 8260 p. 34 for VOA criteria and Method 8270 p. 31 for BNA requirements.)

Comments:

### III. INITIAL AND CONTINUING CALIBRATIONS

Acceptable Outside QC Limits	X
------------------------------	---

The Relative Response Factor (RRF) data were reviewed for the initial and continuing calibrations. Unless flagged below, a 5-point initial calibration was run, and continuing calibrations were performed at the beginning and at the end of any group of samples and at least every 12 hours. In addition, average RRF, Percent relative Standard Deviation (%RSD) and Percent Difference (%D) values were within control limits (aver. RRF >= 0.05; %RSD <= 30; %D <= 25). or analytes which exceeded these control limits, associated data are qualified as estimated (J). In cases where the low calibration level was not detected, the detection limit is qualified (UJ). In cases where the analyte was not detected in the calibration, all associated data are rejected (R).

Comments:

3,3'-dichlorobenzidine had a RSD of 34.2% in the initial calibration (lab pg. 587). However, no positive results for this compound were reported, and no data are qualified.

IV.	FRROR	<b>DETERMINATION</b>
IV.	$\mathbf{r}_{\mathbf{n}}$	DETERMINATION

X	Matrix Spike/Spike Duplicate Samples Analyzed
	No Spike Samples Analyzed

Matrix spike samples are used for a qualitative indication of result bias and precision. Spike recoveries of less than 80% or greater than 120% may be sufficient cause to flag associated data as estimated (J) if the validator believes that the deviation is not due to matrix effects. Recoveries may also be compared with control limits established for the individual compounds (Appendix B).

Comments:

The following compounds were outside QC limits in the MS and/or MSD.

Compound	MS %Recovery	MSD % Recovery
4-nitrophenol	71.6	65.8
Pentachlorophenol	46.8	47.6
2,4-Dinitrotoulene	*	73.4

*Note:* * = within QC limits

No positive results were reported for the above named compounds. Therefore, no data are qualified.

Acceptable X Detection I	Limits Adjusted
The following blanks were analyzed:	
X Preparation Blanks	Field Blanks
Instrument Blanks	Rinsate Blanks
X Background Samples	VOA Trip Blanks

the sample concentration is less than 5x the blank concentration.

dard, prior to sample analysis unless noted below. In addition, instrument blanks were analyzed after high concentration volatiles samples. Any compound detected in the sample and also detected in any associated blank, must be qualified as non-detect (U) when

#### VI. INTERNAL STANDARD AREAS

Acceptable X Outside QC Limits

Internal Standard areas for samples analyzed within a sample group must be within the range of -50% to +100% of the internal standard area for the continuing calibration. If the internal standard area is between 10% and 50% of this value, the associated results are qualified as estimated (J) and the detection limits are qualified as estimated (UJ). If the internal standard area is <10% of the calibration area, both the associated results and detection limits are rejected (R). If the internal standard area is > 100% of the calibration area, the associated results are qualified as estimated (J). For lists of analytes associated with a particular internal standard see SW 846 Method 8260 p.37 for VOA, or Method 8270 p. 33 for BNAs. Internal standards which exceeded these limits are noted below and the associated analytes are qualified on the attached sample report forms.

Comments:

VII.	SURROGATE	<b>RECOVERIES</b>
VII.	SURRUGALE	RECUYERIES

Acceptable ____X Outside QC Limits _____

Surrogate recoveries should be checked against the guidance values listed in SW846 (VOAs: 8260-42, BNAs: 8270-38). List those recoveries which exceed these ranges below. Analytes associated with these surrogates are considered estimated (J).

Comments:

VIII.	DUPI	<b>ICATE</b>	ANAI	LYSES
Y 111.	$\boldsymbol{\nu}$		TALTER	

Acceptable	Outside QC Limits _	*
Type of duplicates analy	yzed:	
Field Duplicate Laboratory Duplicate		

Calculate the relative Percent Difference (RPD) between the members of duplicate pairs using the following equation:

$$RPD = \underline{2(Value 1 - Value 2) \times 100\%}$$
Value 1 + Value 2

Qualify the results as estimated (J) for any analyte whose RPD exceeds that specified in the Sampling Plan.

Comments:

No data for duplicates was provided.

### IX. ANALYTE IDENTIFICATION

Evaluate the ion profiles for the sample analytes and compare them to the library ion profiles provided by the laboratory. Note any identifications which are not sufficiently supported by comparison to known ion profiles.

Comments:

### X. ANALYTE QUANTITATION/DETECTION LIMITS

Confirm that analyte quantitation was performed correctly using the following formula:

sample concentration = (analyte area)(concentration of I.S.)(area of I.S.)(RRF)

where I.S. is the internal standard.

Calculate the quantitation limit from the concentration of the lowest standard. All results reported below this limit are qualified as presumptively present at an estimated quantity (NJ) and noted on the attached sample data sheets.

Comments:

### XI. TIC EVALUATION

Evaluate all tentatively identified compounds (TICs). Confirm that TICs are reported only as a class of compounds and that they are qualified as presumptively present at an estimated concentration.

Comments:

#### XII. OVERALL ASSESSMENT OF GENERAL ANALYTICAL DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

Acceptable X Rejected	Accepted with Qualification	
Accepted data meet the	minimum requirements for the following	EPA data category:
ERS Screening		
Non-definitive with 1	0% Conformation by Definitive	
Methodology	·	
Definitive		X
-	sive Statistical Error Determination Statistical error Determination	X
		<del></del>

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

#### Comments:

- The sample matrix and types of preservatives used were not reported on the chainof-custody.
- CLP Summary forms were not provided. Therefore, data was validated based on the raw data package.
- No data for duplicates was provided.
- 3,3'-dichlorobenzidine had a RSD of 34.2% in the initial calibration (lab pg. 587). However, no positive results for this compound were reported, and no data were qualified.
- No positive results were reported for the compounds outside QC limits in the MS/MSD. Therefore, no data were qualified.

#### **ANALYTICAL DATA REVIEW**

#### APPENDIX A

#### DATA VALIDATION QUALIFIERS

The following list of data validation qualifiers may be used in this data review package:

J The associated numerical value is an estimated quantity because the reported concentrations were less than the required detection limits or because quality control criteria were not met. Presumptive evidence of presence of material. N Presumptive evidence of the presence of the material at an estimated quantity. NJ The material was analyzed for, but not detected. The associated numerical U value is the sample detection limit or adjusted sample detection limit. The material was analyzed for, but not detected. The reported detection limit UJ is estimated because quality control criteria were not met. R The sample results are rejected (analyte may or may not be present) due to gross deficiencies in quality control criteria. Any reported value is unusable Recovery Not Determined (Optional). **RND** Precision Not Determined (Optional). **PND** 

#### ANNOTATED DATA SUMMARY SHEETS

Hand-annotated copies of the Data Summary Sheets from the analytical data package follow. When appropriate, detection limits have been adjusted to reflect effects of relevant qualifications noted during the data review. Errors in the reporting of detected compound results will usually not be changed by hand. In these cases, the laboratory may be required to re-submit portions of the data package and any affected Data summary Sheets. Any additional quality control failures have been flagged using the above listed data validation qualifiers.

Pages of Annotated Data summary Sheets follow.

ST-4A.DOC

Client Name	Ecology & Environment, Inc.
Client ID:	ST-4A
Lab ID:	71868-01
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	83.54

### Semivolatile Organics by USEPA Method 8270

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
Nitrobenzene - d5	72		23	120
2 - Fluorobiphenyl	78		30	115
p - Terphenyl - d14	72		18	137
Phenol - d5	76		24	113
2 - Fluorophenol	66		25	121
2,4,6 - Tribromophenol	54		19	122

Sample results are on a dry weight basis.

Result				
Analyte	(ug/kg)	PQL	Flags	
Phenol	180	590	J	
bis(2-Chloroethyl)ether	ND	590		
2-Chloropher:ol	ND	590		
1,3-Dichlorobenzene	ND	590		
1,4-Dichlorobenzene	ND	590		
Benzyl Alcohol	ND .	590		
1,2-Dichlorobenzene	ND	590		
2-Methylphenol	ND	590		
bis(2-Chloroisopropyl)ether	ND	590		
3- & 4-Methylphenol	ND	590		
N-nitroso-di-n-propylamine	ND	590		
Hexachloroethane	ND	590		
Nitrobenzene	ND	590		
Isophorone	ND	590		
2-Nitrophenol	ND	590	-	
2,4-Dimethylphenol	ND	590		
Benzoic Acid	ND	590		
bis(2-Chloroethoxy)methane	ND	590		
2,4-Dichlorophenol	ND .	590		
1,2,4-Trichlorobenzene	NC)	590		
Naphthalene	NC	120		
4-Chloroaniline	GN	590		
Hexachlorobutadiene	ND	590		
4-Chloro-3-methylphenol	ND	590		
2-Methylnaphthalene	320	120		
Hexachlorocyclopentadiene	ND	590		

5/18/98/00

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Semivolatile Organics by USEPA Method 8270 data for 71868-01 continued...

	Result		
Analyte	(ug/kg)	PQL	Flags
2,4,6-Trichlorophenol	ND	590	
2,4,5-Trichlorophenol	ND	590	
2-Chloronaphthalene	ND	120	
2-Nitroaniline	ND	590	
Dimethylphthalate	ND	590	
Acenaphthylene	ND	120	
2,6-Dinitrotoluene	ND	590	
3-Nitroaniline	ND	590	
Acenaphthene	ND	120	
2,4-Dinitrophenol	ND	590	
4-Nitrophenol	ND	590	
Dibenzofuran	ND	590	
2,4-Dinitrotoluene	ND .	590	
Diethylphthalate	ND	590	
4-Chlorophenylphenylether	ND	590	
Fluorene	ND	120	
4-Nitroaniline	ND · ·	590	
4,6-Dinitro-2-methylphenol	ND	590	
N-Nitrosodiphenylamine	ND	590	
4-Bromophenylphenylether	ND	590	
Hexachlorobenzene	ND	590	
Pentachlorophenol	ND	590	
Phenanthrens	810	120	
Anthracene	ND	120	
Di-n-butylphthalate	ND	590	
Fluoranthene	1000	120	
Pyrene	950	120	
Butylbenzylphthalate	ND	590	
3,3'-dichlorobenzidine	ND	590	
Benzo(a)anthracene	440	120	
Chrysene	580	120	
bis(2-Ethylhexyl)phthalate	510	590	J
Di-n-octylphthalate	ND	590	
Benzo(b)fluoranthene	630	120	-
Benzo(k)fluoranthene	180	120	•
Benzo(a)pyrene	490	120	
Indeno(1,2,3-cd)pyrene	ND	120	
Dibenz(a,h)anthracene	ND	120	
Benzo(g,h.i)perylene	ND	120	
	•		



Ecology & Environment, Inc. Client Name Client ID: ST-4B 71868-02 Lab ID: Date Received: 4/8/98 4/10/98 Date Prepared: 4/10/98 Date Analyzed: % Solids 79.84

### Semivolatile Organics by USEPA Method 8270

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
Nitrobenzene - d5	88		23	120
2 - Fluorobiphenyl	75		30	115
p - Terphenyl - d14	73		18	137
Phenol - d5	78		24	113
2 - Fluorophenol	90		25	121
2,4,6 - Tribromophenol	89		19	122

Sample results are on a dry weight basis.

Result			
Analyte	(ug/kg)	PQL	Flags
Phenol	ND	590	
bis(2-Chloroethyl)ether	ND	590	
2-Chlorophenol	ND	590	
1,3-Dichlorobenzene	ND	590	
1,4-Dichlorobenzene	ND	590	
Benzyl Alcohol	ND	590	
1,2-Dichlorobenzene	ND	590	
2-Methylphenol	ND	590	
bis(2-Chloroisopropyl)ether	ND	590	
3- & 4-Methylphenol	ND	590	
N-nitroso-di-n-propylamine	ND	590	
Hexachloroethane	ND	590	
Nitrobenzene	ND	590	
Isophorone	ND	590	_
2-Nitrophenol	ND	590	
2,4-Dimethylphenol	ND	590	
Benzoic Acid	ND	590	
bis(2-Chloroethoxy)methane	ND	590	
2,4-Dichlorophenol	ND	590	
1,2,4-Trichlorobenzene	ND	590	
Naphthalene	ND	120	
4-Chloroaniline	ND	590	
Hexachlorobutadiene	ND	590	
4-Chioro-3-methylphenoi	ND	590	
2-Methylnaphthalene	ND	120	
Hexachlorocyclopentadiene	ND	590	

Semivolatile Organics by USEPA Method 8270 data for 71868-02 continued...

	Result		
Analyte	(ug/kg)	PQL	Flags
2,4,6-Trichlorophenol	ND	590	
2,4,5-Trichlorophenol	ND	590	
2-Chloronaphthalene	ND	120	
2-Nitroaniline	ND	590	
Dimethylphthalate	ND	590	
Acenaphthylene	ND	120	
2,6-Dinitrotoluene	ND	590	
3-Nitroaniline	ND	590	
Acenaphthene	ND	120	
2,4-Dinitropheriol	ND	590	
4-Nitrophenol	ND	590	
Dibenzofuran	ND	590	
2,4-Dinitrotoluene	ND	590	
Diethylphthalate	ND	590	
4-Chlorophenylphenylether	ND	590	
Fluorene	ND	120	
4-Nitroaniline	ND	590	
4,6-Dinitro-2-methylphenol	ND	590	
N-Nitrosodiphenylamine	ND	590	
4-Bromophenylphenylether	ND	590	
Hexachlorobenzene	ND	590	
Pentachlorophenol	ND	590	
Phenanthrene	1300	120	
Anthracene	ND	120	
Di-n-butylphthalate	ND	590	
Fluoranthene	1600	120	
Pyrene	1800	120	
Butylbenzylphthalate	ND	590	
3,3'-dichlorobenzidine	ND	590	
Benzo(a)anthracene	450	120	
Chrysene	790	120	
bis(2-Ethylhexyl)phthalate	200	590	J
Di-n-octylphthalate	ND	590	
Benzo(b)fluoranthene	690	120	_
Benzo(k)fluoranthene	. 150	120	-
Benzo(a)pyrene	600	120	
Indeno(1,2,3-cd)pyrene	ND	120	
Dibenz(a,h)anthracene	ND	120	
Benzo(g,h,i)perylene	330	120	

Client Name Ecology & Environment, Inc.
Client ID: ST-5
Lab ID: 71868-03

Date Received: 4/8/98

Date Prepared: 4/10/98

Date Analyzed: 4/10/98
% Solids 76.18

### Semivolatile Organics by USEPA Method 8270

			Recovery Limits		
Surrogate	% Recovery	Flags	Low	High	
Nitrobenzene - d5	79		23	120	
2 - Fluorobiphenyl	60		30	115	
p - Terphenyl - d14	59		18	137	
Phenol - d5	95		24	113	
2 - Fluorophenol	93		25	121	
2,4,6 - Tribromophenol	84	•	19	122	

Sample results are on a dry weight basis.

Flags
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Semivolatile Organics by USEPA Method 8270 data for 71868-03 continued...

	Re	sult		
Analyte	(ug	ı/kg)	PQL	Flags
2,4,6-Trichlorophenol	ND		130	_
2,4,5-Trichlorophenol	ND		130	
2-Chloronaphthalene	ND		26	
2-Nitroaniline	ND		130	
Dimethylphthalate	ND		130	
Acenaphthylene	ND		26	
2,6-Dinitrotoluene	ND		130	
3-Nitroaniline	ND		130	
Acenaphthene	ND		26	
2,4-Dinitrophenol	ND		130	
4-Nitrophenol	ND		130	
Dibenzofuran	ND		130	
2,4-Dinitrotoluene	ND		130	
Diethylphthalate	ND		130	
4-Chlorophenylphenylether	ND		130	
Fluorene	ND		26	
4-Nitroaniline	ND .	•	130	
4,6-Dinitro-2-methylphenol	ND		130	
N-Nitrosodiphenylamine	ND		130	
4-Bromophenylphenylether	ND		130	
Hexachlorobenzene	ND		130	
Pentachlorophenol	ND		130	
Phenanthrene		120	26	
Anthracene	ND		26	
Di-n-butylphthalate		54	130	J
Fluoranthene		390	26	
Pyrene		340	26	
Butylbenzylphthalate		140	130	
3,3'-dichlorobenzidine	ND		130	
Benzo(a)anthracene		220	26	
Chrysene		180	26	
bis(2-Ethylhexyl)phthalate		290	130	
Di-n-octylphthalate	ND		130	
Benzo(b)fluoranthene		250	26	<u>.</u>
Benzo(k)fluoranthene		88	26	
Benzo(a)pyrene		220	26	
Indeno(1,2,3-cd)pyrene		110	26	
Dibenz(a,h)anthracene	ND	•	26	
Benzo(g,h,i)perylene		120	26	



Client Name Ecology & Environment, Inc.
Client ID: DW-1
Lab ID: 71868-04

Date Received: 4/8/98

Date Prepared: 4/10/98

Date Analyzed: 4/10/98
% Solids 78.68

### Semivolatile Organics by USEPA Method 8270

			Recovery Limits	
Surrogate	% Recovery	Flags	Low	High
Nitrobenzene - d5	77		23	120
2 - Fluorobiphenyl	71		30	115
p - Terphenyl - d14	59		18	137
Phenol - d5	107		24	113
2 - Fluorophenol	106		25	121
2,4,6 - Tribromophenol	89		19	122

Sample results are on a dry weight basis.

	Result		
Analyte	(ug/kg)	PQL	Flags
Phenol	ND	130	
bis(2-Chloroethyl)ether	ND	130	
2-Chlorophenol	ND	130	
1,3-Dichlorobenzene	ND	130	
1,4-Dichlorobenzene	ND	130	•
Benzyl Alcohol	ND	130	
1,2-Dichlorobenzene	ND	130	
2-Methylphenol	ND	130	
bis(2-Chloroisopropyl)ether	ND	130	
3- & 4-Methylphenol	ND	130	
N-nitroso-di-n-propylamine	ND	130	
Hexachloroethane	ND	130	
Nitrobenzene	ND	130	
Isophorone	ND	130	_
2-Nitrophenol	ND	130	
2,4-Dimethy!phenol	ND	130	
Benzoic Acid	ND	130	
bis(2-Chloroethoxy)methane	ND	130	
2,4-Dichlorophenol	ND	130	
1,2,4-Trichlorobenzene	ND	130	
Naphthalene	ND	25	
4-Chloroaniline	ND	130	
Hexachlorobutadiene	ND	130	
4-Chioro-3-methylphenol	ND	130	
2-Methylnaphthalene	ND	25	
Hexachlorocyclopentadiene	ND	130	

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Semivolatile Organics by USEPA Method 8270 data for 71868-04 continued...

•	Result		
Analyte	(ug/kg)	PQL	Flags
2,4,6-Trichlorophenol	ND	130	
2,4,5-Trichlorophenol	ND	130	
2-Chloronaphthalene	ND	25	
2-Nitroaniline	ND	130	
Dimethylphthalate	ND	130	
Acenaphthylene	ND	25	
2,6-Dinitrotoluene	ND	130	
3-Nitroaniline	ND	130	
Acenaphthene	ND	25	
2,4-Dinitrophenol	ND	130	
4-Nitrophenol	ND	130	
Dibenzofuran	ND	130	
2,4-Dinitrotoluene	ND	130	
Diethylphthalate	ND	130	
4-Chlorophenylphenylether	. ND	130	
Fluorene	ND	25	
4-Nitroaniline	ND · ·	130	
4,6-Dinitro-2-methylphenol	ND	130	
N-Nitrosodiphenylamine	ND	. 130	•
4-Bromophenylphenylether	ND	130	
Hexachlorobenzene	ND	130	
Pentachlorophenol	ND	130	
Phenanthrene	ND	25	
Anthracene	ND	25	
Di-n-butylphthalate	ND	130	
Fluoranthene	38	25	
Pyrene	ND	25	
Butylbenzylphthalate	ND	130	
3,3'-dichlorobenzidine	ND	130	
Benzo(a)anthracene	ND	25	
Chrysene	ND	25	
bis(2-Ethylhexyl)phthalate	240	130	
Di-n-octylphthalate	ND	130	
Benzo(b)fluoranthene	ND	25	-
Benzo(k)fluoranthene	ND	25	
Benzo(a)pyrene	ND	25	
Indeno(1,2,3-cd)pyrene	ND	25	
Dibenz(a,h)anthracene	ND	25	
Benzo(g,h,i)perylene	ND	25	



Client Name Ecology & Environment, Inc.
Client ID: BKG-1
Lab ID: 71868-05

Date Received: 4/8/98

Date Prepared: 4/10/98

Date Analyzed: 4/10/98
% Solids 86.3

### Semivolatile Organics by USEPA Method 8270

			Recovery Limits	
Surrogate	% Recovery	Flags	Low	High
Nitrobenzene - d5	79		23	120
2 - Fluorobiphenyl	81		30	115
p - Terphenyl - d14	63		18	137
Phenol - d5	93		24	113
2 - Fluorophenol	99		25	121
2,4,6 - Tribromophenol	92		19	122

Sample results are on a dry weight basis.

	Result		
Analyte	(ug/kg)	PQL	Flags
Phenol	ND	110	
bis(2-Chloroethyl)ether	ND	110	
2-Chlorophenol	ND .	110	
1,3-Dichlorobenzene	ND	110	
1,4-Dichlorobenzene	ND	110	
Benzyl Alcohol	ND	110	
1,2-Dichlorobenzene	ND	110	
2-Methylphenol	ND	110	
bis(2-Chloroisopropyl)ether	ND	110	
3- & 4-Methylphenol	ND	110	
N-nitroso-di-n-propylamine	ND	110	
Hexachloroethane	ND	110	
Nitrobenzene	ND	110	
Isophorone	ND	110	-
2-Nitrophenol	ND	110	
2,4-Dimethylphenol	ND	110	
Benzoic Acid	ND	110	
bis(2-Chloroethoxy)methane	ND	110	
2,4-Dichlorophenol	ND	110	
1,2,4-Trichlorobenzene	ND	110	
Naphthalene	ND	23	
4-Chloroaniline	ND	110	
Hexachlorobutadiene	ND	110	
4-Chloro-3-methylphenol	ND	110	
2-Methylnaphthalene	ND	23	
Hexachlorocyclopentadiene	ND	110	



Semivolatile Organics by USEPA Method 8270 data for 71868-05 continued...

	Res	sult		
Analyte	(ug.	/kg)	PQL	Flags
2,4,6-Trichlorophenol	ND	•	110	_
2,4,5-Trichlorophenol	ND	•	110	
2-Chloronaphthalene	ND		23	
2-Nitroaniline	ND		110	
Dimethylphthalate	ND		110	
Acenaphthylene	ND		23	
2,6-Dinitrotoluene	ND		110	
3-Nitroaniline	ND		110	
Acenaphthene	ND		23	
2,4-Dinitrophenol	ND		110	
4-Nitrophenol	ND		110	
Dibenzofuran	ND		110	
2,4-Dinitrotoluene	ND		110	
Diethylphthalate	ND		110	
4-Chlorophenylphenylether	ND		110	
Fluorene	ND		23	
4-Nitroaniline	ND		110	
4,6-Dinitro-2-methylphenol	ND		110	
N-Nitrosodiphenylamine	ND		110	
4-Bromophenylphenylether	ND		110	
Hexachlorobenzene	ND		110	•
Pentachlorophenol	ND		110	
Phenanthrene	ND		23	
Anthracene	ND		23	
Di-n-butylphthalate		34	110	j
Fluoranthene		30	23	
Pyrene		30	23	
Butylbenzylphthalate		27	110	J
3,3'-dichlorobenzidine	ND		110	
Benzo(a)anthracene	ND		23	
Chrysene		25	23	
bis(2-Ethylhexyl)phthalate		57	110	J
Di-n-octylphthalate	ND		110	
Benzo(b)fluoranthene	ND		23	•
Benzo(k)fluoranthene	ND		23	
Benzo(a)pyrene	ND		23	
Indeno(1,2,3-cd)pyrene	ND		23	
Dibenz(a,h)anthracene	ND		23	
Benzo(g,h,i)perylene	ND		23	



Client Name	Ecology & Environment, Inc.
Client ID:	ST-1A
Lab ID:	71868-19
Date Received:	4/8/98
Date Prepared:	4/10/98
Date Analyzed:	4/10/98
% Solids	88.45

### Semivolatile Organics by USEPA Method 8270

			Recovery Limits		
Surrogate	% Recovery	Flags	Low	High	
Nitrobenzene - d5	84		23	120	
2 - Fluorobiphenyl	85		30	115	
p - Terphenyl - d14	71		18	137	
Phenol - d5	90		24	113	
2 - Fluorophenol	98		25	121	
2,4,6 - Tribromophenol	88		19	122	

Sample results are on a dry weight basis.

	Result		
Analyte	(ug/kg)	PQL	Flags
Phenol	ND	110	
bis(2-Chloroethyl)ether	ND	110	
2-Chlorophenol	ND	110	
1,3-Dichlorobenzene	ND	110	
1,4-Dichlorobenzene	ND	110	
Benzyl Alcohol	ND	110	
1,2-Dichlorobenzene	ND	110	
2-Methylphenol	ND	110	
bis(2-Chloroisopropyl)ether	ND	110	
3- & 4-Methylphenol	ND	110	
N-nitroso-di-n-propylamine	ND	110	
Hexachloroethane	ND	110	
Nitrobenzene	ND	110	
Isophorone	ND	110	-
2-Nitrophenol	ND	110	
2,4-Dimethylphenol	ND	110	
Benzoic Acid	ND	110	
bis(2-Chloroethoxy)methane	ND	110	
2,4-Dichlorophenol	ND	110	
1,2,4-Trichlorobenzene	ND	110	
Naphthalene	ND	22	
4-Chloroaniline	ND	110	
Hexachlorobutadiene	ND	110	
4-Chloro-3-methylphenol	ND	110	
2-Methylnaphthalene	ND	22	,
Hexachlorocyclopentadiene	ND	110	ζ

Semivolatile Organics by USEPA Method 8270 data for 71868-19 continued...

	Result		
Analyte	(ug/kg)	PQL	Flags
2,4,6-Trichlorophenol	ND	110	
2,4,5-Trichlorophenol	ND	110	
2-Chloronaphthalene	ND	22	
2-Nitroaniline	ND	110	
Dimethylphthalate	ND	110	
Acenaphthylene	ND		
2,6-Dinitrotoluene	ND	110	
3-Nitroaniline	ND	110	
Acenaphthene	ND	22	
2,4-Dinitrophenol	ND	110	
4-Nitrophenol	ND	110	
Dibenzofuran	ND	110 .	
2,4-Dinitrotoluene	ND	110	
Diethylphthalate	ND	110	
4-Chlorophenylphenylether	ND	110	
Fluorene	ND	22	
4-Nitroaniline	ND··	110	
4,6-Dinitro-2-methylphenol	ND	110	
N-Nitrosodiphenylamine	ND	110	
4-Bromophenylphenylether	ND	110	
Hexachlorobenzene	ND	110	
Pentachlorophenol	ND	110	
Phenanthrene	ND	22	
Anthracene	ND	22	
Di-n-butylphthalate	ND	110	
Fluoranthene	ND	22	
Pyrene	ND	22	
Butylbenzylphthalate	ND	110	
3,3'-dichlorobenzidine	ND	110	
Benzo(a)anthracene	ND	22	
Chrysene	ND	22	
bis(2-Ethylhexyl)phthalate	26	110	j
Di-n-octylphthalate	ND	110	
Benzo(b)fluoranthene	ND	22	-
Benzo(k)fluoranthene	ND	22	
Benzo(a)pyrene	ND	22	
Indeno(1,2,3-cd)pyrene	ND	22	
Dibenz(a,h)anthracene	ND	22	
Benzo(g,h,i)perylene	ND	22	



Client Name

Ecology & Environment, Inc.

Client ID: Lab ID: ST-1B 71868-20

Date Received: Date Prepared: Date Analyzed: 4/8/98 4/10/98

% Solids

4/10/98 86.27

### Semivolatile Organics by USEPA Method 8270

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
Nitrobenzene - d5	86	•	23	120
2 - Fluorobiphenyl	95		30	115
p - Terphenyl - d14	67		18	137
Phenol - d5	99		24	113
2 - Fluorophenol	96		25	121
2,4,6 - Tribromophenol	88		19	122

Sample results are on a dry weight basis.

	Result		
Analyte	(ug/kg)	PQL	Flags
Phenol	ND	110	
bis(2-Chloroethyl)ether	ND	110	
2-Chlorophenol	ND	110	
1,3-Dichlorobenzene	ND	110	
1,4-Dichlorobenzene	ND	110	
Benzyl Alcohol	ND	110	
1,2-Dichlorobenzene	ND	110	
2-Methylphenol	ND	110	
bis(2-Chloroisopropyl)ether	ND	110	
3- & 4-Methylphenol	ND	110	
N-nitroso-di-n-propylamine	ND	110	
Hexachloroethane	ND	110	
Nitrobenzene	ND	110	
Isophorone	ND	110	-
2-Nitrophenol	ND	110	
2,4-Dimethylphenol	ND	110	
Benzoic Acid	ND	110	
bis(2-Chloroethoxy)methane	ND	110	
2,4-Dichlorophenol	ND	110	
1,2,4-Trichlorobenzene	ND	110	
Naphthalene	ND	22	
4-Chloroaniline	ND	110	
Hexachlorobutadiene	ND	110	
4-Chloro-3-methylphenol	ND	110	
2-Methylnaphthalene	ND	22	
Hexachlorocyclopentadiene	ND	110	



Semivolatile Organics by USEPA Method 8270 data for 71868-20 continued...

	Result		
Analyte	(ug/kg)	PQL	Flags
2,4,6-Trichlorophenol	ND	110	
2,4,5-Trichlorophenol	ND	110	
2-Chloronaphthalene	ND	22	
2-Nitroaniline	ND	110	
Dimethylphthalate	ND	110	
Acenaphthylene	ND	22	
2,6-Dinitrotoluene	ND	110	
3-Nitroaniline	ND	110	
Acenaphthene	ND	22	
2,4-Dinitrophenol	ND	110	
4-Nitrophenol	ND	110	
Dibenzofuran	ND	110	
2,4-Dinitrotoluene	ND	110	
Diethylphthalate	ND	110	
4-Chlorophenylphenylether	ND	110	
Fluorene	ND	22	
4-Nitroaniline	ND	110	
4,6-Dinitro-2-methylphenol	ND	110	
N-Nitrosodiphenylamine	ND	110	
4-Bromophenylphenylether	ND	110	
Hexachlorobenzene	ND	110	
Pentachlorophenol	ND	110	
Phenanthrene	ND	22	
Anthracene	ND	22	
Di-n-butylphthalate	ND	110	
Fluoranthene	ND	22	
Pyrene	ND	22	
Butylbenzylphthalate	ND	110	
3,3'-dichlorobenzidine	ND	110	
Benzo(a)anthracene	ND	22	
Chrysene	ND	22	
bis(2-Ethylhexyl)phthalate	ND	110	
Di-n-octylphthalate	ND	110	
Benzo(b)fluoranthene	ND	22	_
Benzo(k)fluoranthene	ND	22	
Benzo(a)pyrene	ND	22	
Indeno(1,2,3-cd)pyrene	ND	22	
Dibenz(a,h)anthracene	ND	22	
Benzo(g,h,i)perylene	ND	22	



Client Name Ecology & Environment, Inc.
Client ID: ST-2A
Lab ID: 71868-21

Date Received: 4/8/98

Date Prepared: 4/10/98

Date Analyzed: 4/10/98
% Solids 87.95

### Semivolatile Organics by USEPA Method 8270

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
Nitrobenzene - d5	81		23	120
2 - Fluorobiphenyl	80		30	115
p - Terphenyl - d14	74		18	137
Phenol - d5	73		24	113
2 - Fluorophenol	82		25	121
2,4,6 - Tribromophenol	93		19	122

Sample results are on a dry weight basis.

	Result		•
Analyte	(ug/kg)	PQL	Flags
Phenol	ND	560	
bis(2-Chloroethyl)ether	ND	560	
2-Chlorophenol	ND	560	
1,3-Dichlorobenzene	ND	560	
1,4-Dichlorobenzene	ND	560	
Benzyl Alcohol	ND	560	
1,2-Dichlorobenzene	ND	560	
2-Methylphenol	ND	560	
bis(2-Chloroisopropyl)ether	ND	560	
3- & 4-Methylphenol	ND	560	
N-nitroso-di-n-propylamine	ND	560	
Hexachloroethane	ND	560	
Nitrobenzene	ND	560	
Isophorone	ND	560	-
2-Nitrophenol	ND	560	
2,4-Dimethylphenol	ND	560	
Benzoic Acid	ND	560	
bis(2-Chloroethoxy)methane	ND	560	
2,4-Dichlorophenol	ND	560	
1,2,4-Trichlorobenzene	ND	560	
Naphthalene	ND	110	
4-Chloroaniline	ND	560	
Hexachlorobutadiene	ND	560	
4-Chloro-3-methylphenol	ND	560	
2-Methylnaphthalene	ND	110	
Hexachlorocyclopentadiene	ND	560	

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Semivolatile Organics by USEPA Method 8270 data for 71868-21 continued...

	Result		
Analyte	(ug/kg)	PQL	Flags
2,4,6-Trichlorophenol	ND	560	_
2,4,5-Trichlorophenol	ND	560	
2-Chloronaphthalene	ND	110	
2-Nitroaniline	ND	560	
Dimethylphthalate	ND	560	
Acenaphthylene	ND	110	
2,6-Dinitrotoluene	ND	560	
3-Nitroaniline	ND	560	
Acenaphthene	ND	110	
2,4-Dinitrophenol	ND	560	
4-Nitrophenol	ND	560	
Dibenzofuran	ND	560	
2,4-Dinitrotoluene	ND	560	
Diethylphthalate	ND	560	
4-Chiorophenylphenylether	ND	560	
Fluorene	ND	110	
4-Nitroaniline	ND··	560	
4,6-Dinitro-2-methylphenol	ND	560	
N-Nitrosodiphenylamine	ND	560	
4-Bromophenylphenylether	ND	560	
Hexachlorobenzene	ND	560	
Pentachlorophenol	ND	560	
Phenanthrene	ND	110	
Anthracene	ND	110	
Di-n-butylphthalate	ND	560	
Fluoranthene	290	110	
Pyrene	280	110	
Butylbenzylphthalate	ND	560	
3,3'-dichlorobenzidine	ND	560	
Benzo(a)anthracene	160	110	
Chrysene	190	110	
bis(2-Ethylhexyl)phthalate	170	560	J
Di-n-octylphthalate	ND	560	
Benzo(b)fluoranthene	ND	110	-
Benzo(k)fluoranthene	ND	110	
Benzo(a)pyrene	ND	110	
Indeno(1,2,3-cd)pyrene	ND	110	
Dibenz(a,h)anthracene	ND	110	
Benzo(g,h,i)perylene	ND	110	



Client Name Ecology & Environment, Inc.
Client ID: ST-2B
Lab ID: 71868-22

Date Received: 4/8/98

Date Prepared: 4/10/98
Date Analyzed: 4/10/98
% Solids 77.81

### Semivolatile Organics by USEPA Method 8270

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
Nitrobenzene - d5	76		23	120
2 - Fluorobiphenyl	71		30	115
p - Terphenyl - d14	61		18	137
Phenol - d5	101		24	113
2 - Fluorophenol	100		25	121
2,4,6 - Tribromophenol	93		19	122

Sample results are on a dry weight basis.

	Res	sult		
Analyte	(ug/	kg)	PQL	Flags
Phenol	ND		130	
bis(2-Chloroethyl)ether	ND		130	
2-Chlorophenol	ND		130	
1,3-Dichlorobenzene	ND		130	
1,4-Dichlorobenzene	ND		130	
Benzyl Alcohol	ND		130	
1,2-Dichlorobenzene	ND		130	
2-Methylphenol	ND		130	
bis(2-Chloroisopropyl)ether	ND		130	
3- & 4-Methylphenol	ND		130	
N-nitroso-di-n-propylamine	ND		130	
Hexachloroethane	ND		130	
Nitrobenzene	ND		130	
isophorone	ND		130	_
2-Nitrophenol	ND		130	
2,4-Dimethylphenol	ND		130	
Benzoic Acid	ND		130	
bis(2-Chloroethoxy)methane	ND		130	
2,4-Dichlorophenol	ND		130	
1,2,4-Trichlorobenzene	ND		130	
Naphthalene		30	25	
4-Chloroaniline	ND		130	
Hexachlorobutadiene	ND		130	
4-Chloro-3-methylphenol	ND		130	
2-Methylnaphthalene		45	25	$\lambda$ .
Hexachlorocyclopentadiene	ND		130	5

Semivolatile Organics by USEPA Method 8270 data for 71868-22 continued...

	Result		
Analyte	(ug/kg)	PQL	Flags
2,4,6-Trichlorophenol	ND	130	_
2,4,5-Trichlorophenol	ND	130	
2-Chloronaphthalene	ND	25	
2-Nitroaniline	ND	130	
Dimethylphthalate	ND .	130	
Acenaphthylene	ND	25	
2,6-Dinitrotoluene	ND	130	
3-Nitroaniline	ND	130	
Acenaphthene	ND	25	
2,4-Dinitrophenol	ND	130	
4-Nitrophenol	ND	130	
Dibenzofuran	ND	130	
2,4-Dinitrotoluene	ND	130	
Diethylphthalate	ND	130	
4-Chlorophenylphenylether	ND	130	
Fluorene	ND	25	
4-Nitroaniline	ND··	130	
4,6-Dinitro-2-methylphenol	ND	130	
N-Nitrosodiphenylamine	ND	130	
4-Bromophenylphenylether	ND	130	
Hexachlorobenzene	ND	130	
Pentachlorophenol	ND	130	
Phenanthrene	33	25	
Anthracene	ND	25	
Di-n-butylphthalate	40	130	J
Fluoranthene	ND	25	
Pyrene	ND	25	
Butylbenzylphthalate	620	130	
3,3'-dichlorobenzidine	ND	130	
Benzo(a)anthracene	ND	25	
Chrysene	ND	25	
bis(2-Ethylhexyl)phthalate	76	130	J
Di-n-octylphthalate	ND	130	
Benzo(b)fluoranthene	ND	25	-
Benzo(k)fluoranthene	ND	25	
Benzo(a)pyrene	ND	25	
Indeno(1,2,3-cd)pyrene	ND	25	
Dibenz(a,h)anthracene	ND	25	•
Benzo(g,h,i)perylene	ND	25	



71868

REGION 9

75 Hawthorne Street
San Francisco, California 94105

Offi	ice of Enforcem	ent		'	СН	AIN OF CUS	TOD	YRE	COF	RD			75 Hawthorne Street San Francisco, California 94105
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SAMPLERS: 15	Signature)	12	uda	Def	i	OF CON-		/					REMARKS
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5-4	1608	<u>X</u>	5T-4	4B		2×40=	XX:	X	<b>K</b>	X		30	<del>                                     </del>
ST-5	1630	X	5T- ±	<u> </u>		204 12		_				zX#	
DW-1	1617	X	DW-			2×402	.X.	Xe	1	X		X	DO MS /MSD IF SUFFICIENT SAMPLE VOLU
3KG-1	1650	X	BKG	<u> </u>		JX40Z	W	Xsp				X	
5T-3	1545	X	<i>5</i> 7-3	$\mathcal{D}$		ZXIL.	<u> </u>	<u> </u>	X		<b>X</b>		
57-3	1595	X	<i>5</i> 7-3	<u>D_</u>		IXIL.		X					
T-3	1545	X	<u> 5T-3</u>	D		4 X 401	XX					X	<u> </u>
T-3	1550	X	57-3		<del></del>	2×14	<u> </u>	<u> </u>	X#		X		
57-3	1550	X	ST-3	E	,	1x/4		X					
57-3	1550	X	ST-	3 E	· · · · · · · · · · · · · · · · · · ·	4x40m	X					X	· · · · · · · · · · · · · · · · · · ·
15T-1	1635	X	UST-	1		IKIL			X				* As requested in contract w/
157-1	1635	X	UST-	./		IKIL		X					Sound Laboratory
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TO Y	1800	X	TB-2	- 4	4/98	1X40m							
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75 Hawthorne Street an Francisco, California 94105

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**REGION 9** 

75 Hawthorne Street San Francisco, California 94105

**CHAIN OF CUSTODY RECORD** PROJECT NAME PROJ. NO. 159103 WDI TANK ASSESSMENT NO. SAMPLERS: (Signature) OF REMARKS CON-**TAINERS** TIME STA. NO. DATE STATION LOCATION 1998 4/6 ST-5T-1A 1420 2×402 ST-1B ST-1 1425 ST- ZA 51-2 1445 V ST-2 1451 ST-3A 15T-3 1×11. Nost pH>12 1520 ST-3A ST-3 1520 1×12. 1520 ST-3A 157-3 x 12. 57-3 5T-3A 6×40mlix 1520 **37-3** 1525 MOH PH) 12 ON 9010 ANALYSIS 5T-3B AXIL. 1525 ST-3B ST-3 4×40ml X 15T-3 1525 ST-33 * AS REQUESTED IN CONTRACT W/ 157-3 1530 5T-3C 2 XILIT SOUND LABORATORY 1530 ST-3C IXLL 4x 40 ml X 1530 ST-3C 1800 1×40 Bel 🔆 Relinquished by: (Signature) Date / Time Received by: (Signature) Relinquished by: (Signature) Date / Time Received by: (Signature) 1200 FED-X Relinquished by: (Signature) Date / Time Relinquished by: (Signature) Date / Time Received by: (Signature) Received by: (Signature) Relinquished by: (Signature) Date / Time Date / Time Remarks Received fon Laboratory by: "FED-X B/L # 804733300967 (Sign Stuce) 18/98 930Am SILINO

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

Client: Ecology & Environment, Inc.

Date: April 29, 1998

Project:

KJ9103 WDI Tank Assessment

Lab No.: 71868

#### SAMPLE EXTRACTION AND ANALYSIS

#### **VOLATILE ORGANICS**

Samples 71868-1 through 71868-5, 71868-19 through 71868-22 (soils) and 71868-8, 71868-11, 71868-14, 71868-15, 71868-18, 71868-26, 71868-29, 71868-32 and 71868-33 (liquids) were analyzed for volatile organics in accordance with EPA Method 8260. The soil samples were prepared and analyzed on 4-10-98. The liquid samples were prepared and analyzed on 4-10-98.

Sample 71868-14 was received at a pH of 7. Sample 71868-18 was received at a pH of 5.

All quality control was within the acceptance limits.

Acetone calculation from sample 71868-1 18.98 x 5ml 5.4507g x 0.8354

#### **SEMIVOLATILE ORGANICS**

Samples 71868-1 through 71868-5 and 71868-20 through 71868-22 (soils) were analyzed for semivolatile organics in accordance with EPA Method 8270. The samples were prepared and analyzed on 4-10-98.

All quality control was within the acceptance limits.

Instrument reading x final volume x dilution factor sample weight or volume x dry weight

#### **PESTICIDES AND PCBs**

Samples 71868-1 through 71868-5, 71868-19 through 71868-22 (soils) and 71868-7, 71868-10, 71868-13, 71868-17, 71868-25, 71868-28, and 71868-31 (liquids) were analyzed for pesticides and PCBs in accordance with EPA Method 8081. The soil samples were extracted on 4-15-98 analyzed on 4-18-98. The liquid samples were extracted on 4-13-98 and analyzed on 4-16-98.

Second column confirmation was performed. The values are flagged "C1" or "C2" as deemed appropriate.

The percent recovery of DCB (surrogate) in the method blank associated with the liquid samples failed low. Reanalysis exhibited similar results. Insufficient sample volume was available for reextraction and reanalysis.

All quality control was within the acceptance limits.

Extract concentration x extract volume x dilution factor
Sample volume or weight x percent solids

## ANALYTICAL DATA REVIEW SUMMARY

Site Name:	WDI Tank Assessment
Location:	Santa Fe Springs, California
PAN No.:	0294-WDSF-XX
TDD No.:	09-9803-0006
Laboratory:	Sound Analytical Services, Inc.
Sampling Date:	April 6, 1998
Analytical Method:	8015M (TPH-g)
Sample Matrix:	Soil/ Water

Sample No.	Sample I.D.	Laboratory I.D.
1	ST-5	71868-03
2	ST-4A	71868-01
3	DW-1	71868-04
4	BKG-1	71868-05
5	ST-3D	71868-08
6	ST-3E	71868-11
7	UST-1	71868-14
8	EB-1	71868-18
9	ST-1A	71868-19
10	ST-2A	71868-21
11	ST-3A	71868-26
12	ST-3B	71868-29
13	ST-3C	71868-32

Data Reviewer:	Trisha J. Woolslayer	Irasha	J. Wro Islame	5/18/98
Chemist QA Reviewer: START PM Acceptance:			0	

### GC METHODS DATA VALIDATION WORKSHEET – SUMMARY

Report Labora Review Review Analyti	tory: er:	71868 Sound An Trisha J. May 15, 1 8015M	Woolslaye	ervices, Inc.		
No. of S	Samples	Water:	7	Solid:	6	Other:
1.	Holding Time				<u> </u>	
2.	Surrogate Re	-			<u> </u>	<del></del>
3.	Matrix Spike	/Spike Dup	licate		<u> </u>	
4.	Blanks				<u> </u>	MALINEAU NA
5.	Initial Calibra				<u> </u>	
6.	Continuing C				<u> </u>	<u></u>
7.	Internal Stan				<u> </u>	
8.	Compound I				<u> </u>	
9.	Compound C	-	l		<u> </u>	
10.	TIC Identific				<u> </u>	
11.	System Perfo				<u> </u>	<del></del>
12.	Overall Asse	ssment			<u> </u>	
	oblems/Commo -custody.	ents: <i>The so</i>	ample ma	trix and preserve	atives used v	vere not reported on the

### GC ORGANIC ANALYSES

### DATA PACKAGE COMPLETENESS CHECKLIST

Checklist Code:	X	Included: no problems
	*	Included: problems noted in review
	0	Not Included and/or Not Available
	NR	Not Required
	RS	Provided As Re-submission
		•
V Com N	la-maticus	
X Case N	farrative	
Quality Control Su	ımmary Pack	age
X	•	mmary Sheets (Form I)
$\overline{X}$	Surroga	te Recovery Summary (Form II)
$\overline{X}$	Matrix S	Spike/Spike Duplicate Recoveries (Form III)
$\overline{X}$	Method	Blank Summaries (Form IV)
N/A	Pesticid	e Evaluation Standards Summary (Form VIII)
N/A	Pesticid	e/ PCB Standards Summary (Form VIIII)
N/A	Pesticid	e/ PCB Identification (Form X)
Sample and Blank	Data Packar	re Section
X	_	ent Chromatograms *
$\frac{X}{X}$		ion Results *
$\frac{X}{X}$		ation Analysis Results
$\frac{1}{X}$	<del></del>	of all Calculations of Results
0		nstrument Detection Limits
$\overline{X}$	Chain-o	f-Custody
X		Preparation and Analysis Run Logs

^{*} Results for all samples, standards, blanks, MS/MSD and PE samples may be provided.

Other:

T	Н	O	T	D	IN	G	T	IN	ИE	S
1.			, .	,,,,	11,	•••		411		•

Acceptable	X	Outside QC Limits	

Samples were prepared and analyzed within applicable holding times, except as noted below. Generally, water samples have a holding time of 7 days (HCL preserved water samples may be held for 14 days prior to extraction). Soil, sludge and sediment samples have a holding time of 14 days. Water and soil extracts may be held for 40 days, in sealed amber vials at 4C prior to analysis. For those sample fractions prepared or analyzed outside of holding time requirements, results greater than the Method detection Limit (MDL) have been qualified as estimates ("J"). Results less than the MDL may be flagged as estimated ("UJ") or rejected ("R") based on the professional judgement of the data reviewer.

#### Comments:

All water samples except for ST-3D had results below the detection limits. All water samples were held more than the allowable seven day holding time. Mr. Mike Schwenessen of Ecology & Environment reported that all samples were preserved. Based on the preservation of the water samples, no data were qualified with regards to holding times.

## II. INSTRUMENT PERFORMANCE

,	NSTRUMENT TERFORMANCE
	A. Initial and Continuing Calibration
	Acceptable X Outside QC Limits
	Verify that a minimum of five Initial Calibration Standards (ICS) were used to construct the Response Factor(s) (Rf) or standard curve. Verify that the lowest concentrated ICS is at or near the reported Method Detection Limit (MDL). confirm that the Mean Rf possesses a Percent Relative Standard Deviation (%RSD) <20%. Verify that all Continuing Calibration Verification (CCV) results possess a Percent Difference (%D) <15% (quantitation column) and ≤20% (confirmation column, if applicable). All positive results associated with invalid initial and/or continuing calibration data are reported as estimates ("J").
	Comments:
	No comments.

TT	(CONT.)
II.	

B. Peak Resolution and Retention Time Stability

Acceptable X Outside QC Limits

The raw data was checked to verify that there was adequate resolution (R < 25%) between peaks of the standard compounds. Confirm that the laboratory has submitted valid Retention Time (RT) windows for all compounds of interest, including surrogates (Surr) and Internal Standards (IS), if applicable. Check the RT data and verify that all raw data (QC and samples) conforms to established RT windows. If a single sample RT shift was noted, was a post extraction spike of the same sample analyzed? If a consistent RT shift was observed in several samples, was the same RT shift observed in the MS/MSD? To confirm that the RT shift was matrix related, was a CCV standard successfully analyzed at the end of the analytical sequence?

Comments:

A. Laboratory Control Sample

#### III. METHOD PERFORMANCE

Acceptable	<u>X</u>	Outside QC Limits	

Verify that a Laboratory Control Sample (LCS), containing all of the compounds of interest was successfully analyzed at the beginning of the analytical sequence to confirm acceptable method performance. If more that 20% of LCS compounds failed to meet a %Recovery (%R) of 85-115% of the true value, was a second LCS analyzed to re-check the failed compounds? If a LCS was not successfully analyzed (or re-analyzed), all positive sample data for the failed compounds are qualified as estimates ("J").

Comments:

### III. (CONT.)

B. Surrogate(s) and Internal Standard(s)

If the method of Internal Standard (IS) analysis was utilized, verify that the IS recovery for each sample analyzed did not vary by more than a factor of 2 (i.e. <50% of >100%) compared to the average IS response from the initial calibration. Verify that all Surrogate (Surr) recoveries are within the acceptable laboratory control limits. If any IS or surrogate quality control criteria is not within control limits, sample data qualification is left to the professional judgement of the data reviewer.

Comments:

III.	(CONT.)	
	C. Error Determination	

X Matrix Spike/Spike Duplicate Samples Analyzed
No Spike Samples Analyzed

A Matrix Spike/Matrix Spike Duplicate (MS/MSD) pair may be analyzed to estimate bias or % Recovery (%Rec), and precision or Relative Percent Difference (RPD). The %Rec for the MS and MSD should not exceed the limits of 80-120% of the spiked concentration. The MS/MSD RPD should not exceed 20%. Sample results associated with poor MS/MSD data may be reported as estimates ("J") based on the reviewers professional judgement and the nature of the samples and analyte(s). NOTE: A low %Rec for the MS and MSD, and acceptable MS/MSD RPD may indicate an unavoidable matrix related error associated with the entire sample group. A duplicate LCS analyzed at the end of the analytical sequence may be used to confirm the existence of a matrix related error.

Comments:

Acceptat	ble <u>X</u> Γ	Detection L	imits Adju	sted	
The follow	ving blanks were a	nalyzed:			
X	Preparation Blank	ks		Field Blanks	
	Instrument Blank	S	X	Rinsate Blanks	
$\overline{X}$	Background Sam	ples		Trip Blanks	
				aration blank was successfully anal	

#### V. COMPOUND IDENTIFICATION

Where applicable, verify that qualitative criteria for dual column confirmation analysis was met for all positive compound identifications. A dissimilar GC column and identical detector were used for the confirmation analysis (GC/MS analysis may also be used for confirmatory analysis, where applicable). If qualitative criteria were not met, all reported positive results for a sample or sample delivery group were qualified as presumptively present at an estimated quantity ("NJ").

Comments:

### VI. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

Verify that compound quantitation and detection limit reporting for both positive and non-detect samples were correctly adjusted to account for dilutions, extract concentration, splits, clean-up procedures, sample dry weight factors etc. All errors were reported to the laboratory for re-submission of the data.

Comments:

VII.	PERFOR	MANCE	EVALUA	ATION S	AMPLES

Acceptable	Not Analyzed	X
Failed		

If a performance sample was submitted, were the laboratory reported recoveries within the documented limits? If 50%, or more of the performance sample compounds were outside of the established confidence limits or were misidentified, all sample results were rejected ("R"). If less than 50% of the performance sample compounds was outside of the established confidence limits or misidentified, qualification is left to the professional judgement of the data reviewer.

Comments:

No performance evaluation sample submitted.

#### XII. OVERALL ASSESSMENT OF GENERAL ANALYTICAL DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

Acceptable Rejected	Accepted with Qualification	
Accepted data i	meet the minimum requirements for the following	EPA data category:
ERS Screenin	g	
Non-definitive	e with 10% Conformation by Definitive	
Methodology		
Definitive		X
	prehensive Statistical Error Determination hensive Statistical error Determination	X

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

#### Comments:

- The sample matrix and preservatives used were not reported on the chain-of-custody.
- All water samples were held more than the allowable seven day holding time. Based
  on the reported preservation of the water samples, no data were qualified with regards to holding times.

#### ANALYTICAL DATA REVIEW

#### APPENDIX A

#### **DATA VALIDATION QUALIFIERS**

The following list of data validation qualifiers may be used in this data review package:

J The associated numerical value is an estimated quantity because the reported concentrations were less than the required detection limits or because quality control criteria were not met. Presumptive evidence of presence of material. N Presumptive evidence of the presence of the material at an estimated quantity. NJ The material was analyzed for, but not detected. The associated numerical U value is the sample detection limit or adjusted sample detection limit. The material was analyzed for, but not detected. The reported detection limit UJ is estimated because quality control criteria were not met. The sample results are rejected (analyte may or may not be present) due to R gross deficiencies in quality control criteria. Any reported value is unusable Recovery Not Determined (Optional). RND Precision Not Determined (Optional). **PND** 

#### ANNOTATED DATA SUMMARY SHEETS

Hand-annotated copies of the Data Summary Sheets from the analytical data package follow. When appropriate, detection limits have been adjusted to reflect effects of relevant qualifications noted during the data review. Errors in the reporting of detected compound results will usually not be changed by hand. In these cases, the laboratory may be required to re-submit portions of the data package and any affected Data summary Sheets. Any additional quality control failures have been flagged using the above listed data validation qualifiers.

Pages of Annotated Data summary Sheets follow.

Client Name
Client ID:
Lab ID:
Date Received:
Date Prepared:

Date Analyzed:

% Solids

Ecology & Environment, Inc.

ST-4A 71868-01 4/8/98 4/16/98

4/17/98 83.54

#### Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	<b>Low</b>	High
Trifluorotoluene	77		50	150

Sample results are on a dry weight basis.

Result
Analyte (mg/kg) PQL Flags
Gasoline Range Organics 48 1.2

418/98 M

Client Name

Ecology & Environment, Inc.

Client ID: Lab ID: ST-5 71868-03

Date Received: Date Prepared:

4/8/98

Date Prepared:

Date Analyzed:

4/16/98 4/17/98

% Solids

76.18

#### Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
Trifluorotoluene	-	X8	<b>50</b>	150

	Result		
Analyte	(mg/kg)	PQL	Flags
Gasoline Range Organics	210	26	_



Client Name

Ecology & Environment, Inc.

Client ID:

Lab ID:

Date Received:

Date Prepared: Date Analyzed:

% Solids

DW-1 71868-04

4/8/98

4/16/98

4/17/98

78.68

#### Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ery Limits
Surrogate Trifluorotoluene	% Recovery 77	Flags	<b>Low</b> 50	High 150

	Result		
Analyte	(mg/kg)	PQL	Flags
Gasoline Range Organics	ND	1.2	



Client Name

Client ID:

Ecology & Environment, Inc.

Lab ID:

Date Received: Date Prepared:

Date Analyzed:

% Solids

BKG-1

71868-05

4/8/98

4/16/98

4/17/98 86.3

Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
Trifluorotoluene	80		50	150

	Result		
Analyte	(mg/kg)	PQL	Flags
Gasoline Range Organics	1.3	1.2	

Client Name

Ecology & Environment, Inc.

Client ID:

ST-3D

Lab ID:

71868-08

Date Received:

4/8/98

Date Prepared: Date Analyzed:

4/16/98

% Solids

4/17/98

### Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
Trifluorotoluene	96		50	150

	Result		
Analyte	(mg/L)	PQL	Flags
Gasoline Range Organics	0.037	0.025	



Client Name

Ecology & Environment, Inc.

Client ID: Lab ID: ST-3E 71868-11

Date Received:

4/8/98

Date Prepared: Date Analyzed: 4/16/98 4/17/98

% Solids

-

### Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
Trifluorotoluene	89		50	150

	Result		
Analyte	(mg/L)	PQL	Flags
Gasoline Range Organics	ND	0.025	

5/18/98

Client Name

Ecology & Environment, Inc.

Client ID:

UST-1

Lab ID:

71868-14

Date Received: Date Prepared:

4/8/98 4/16/98

Date Analyzed: % Solids

4/17/98

## Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ery Limits
Surrogate Trifluorotoluene	% Recovery 93	Flags	Low 50	High 150
imadioloidene	33		30	130

	Result		
Analyte	(mg/L)	PQL	Flags
Gasoline Range Organics	ND	0.025	_



**Client Name** 

Ecology & Environment, Inc.

Client ID: Lab ID:

D: EB-1 D: 71868-18

Date Received:

4/8/98

Date Prepared: Date Analyzed: 4/16/98 4/17/98

% Solids

•

### Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
Trifluorotoluene	94		50	150

	Result		
Analyte	(mg/L)	PQL	Flags
Gasoline Range Organics	ND	0.025	



**Client Name** 

Ecology & Environment, Inc.

Client ID:

Lab ID:

Date Received: Date Prepared:

Date Analyzed:

% Solids

ST-1A

71868-19

4/8/98

4/16/98

4/17/98

88.45

#### Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
Trifluorotoluene	72		50	150

	Result		
Analyte	(mg/kg)	PQL	Flags
Gasoline Range Organics	ND	1.1	



Client Name

Ecology & Environment, Inc.

Client ID: Lab ID:

ST-2A

Date Received:

71868-21

Date Prepared:

4/8/98

Date Analyzed:

4/16/98 4/17/98

% Solids

87.95

## Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
Trifluorotoluene	76		<b>50</b>	150

	Result		
Analyte	(mg/kg)	PQL	Flags
Gasoline Range Organics	1.5	1.1	



Client Name

Ecology & Environment, Inc.

Client ID:

ST-3A 71868-26

Lab ID:

71868-26

Date Received: Date Prepared: Date Analyzed: 4/8/98 4/16/98 4/17/98

% Solids

### Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
Trifluorotoluene	91		50	150

	Result		
Analyte	(mg/L)	PQL	Flags
Gasoline Range Organics	ND	0.025	

5/18/98

Client Name

Ecology & Environment, Inc.

Client ID:

ST-3B

Lab ID:

71868-29

Date Received:

4/8/98

Date Prepared: Date Analyzed: 4/16/98

% Solids

4/17/98

## Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ery Limits
Surrogate Trifluorotoluene	% Recovery 95	Flags	Low 50	High 150

	Result		
Analyte	(mg/L)	PQL	Flags
Gasoline Range Organics	ND	0.025	_



Client Name

Ecology & Environment, Inc.

Client ID: Lab ID:

ST-3C

Date Received:

71868-32

Date Prepared: Date Analyzed: 4/8/98 4/16/98

% Solids

4/17/98

### Total Petroleum Hydrocarbons as Gasoline by USEPA Method 8015 Modified

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
Trifluorotoluene	94		50	150

	Result		
Analyte	(mg/L)	PQL	Flags
Gasoline Range Organics	ND	0.025	_

5)18/98

71868

**REGION 9** 

75 Hawthorne Street San Francisco, California 94105

CHAIN OF CUSTODY RECORD PROJECT NAME PROJ. NO. TANK ASSESSMENT NO. SAMPLERS: (Signature) OF REMARKS CON-TAINERS STA. NO. DATE TIME STATION LOCATION 1559 1608 2044C X ST-5 1630 Xxx DW-DO MS /MSD IE SUFFICIENT SAMPLE VOKUME 11.17 2×402 W X 1650 BKG-1 1545 DILL 1545 XE & X 40MEX 1545 Vat 1550 1550 4240 NX 1550 X * As requested in contract w/ 1635 1635 1635 6x40mix 1800 1 X40M Relinquished by: (Signature) Date / Time Received by: (Signature) Relinquished by: (Signature) Date / Time Received by: (Signature) FED-X 1200 Relinquished by: (Signature) Date / Time Received by: (Signature) Relinquished by: (Signature) Date / Time Received by: (Signature) Relinquished by: (Signature) Date / Time Received for Laboratory by: Date / Time Remarks PEDX B/L # 804733300967 (Signature) 930Am SVIMA Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files 5  $\omega$ 

71868

**REGION 9** 

75 Hawthorne Street San Francisco, California 94105

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71868

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REGION 9

75 Hawthorne Street San Francisco, California 94105

**CHAIN OF CUSTODY RECORD** PROJ. NO. **PROJECT NAME** WDI TANK ASSESSMENT NO. SAMPLERS: (Signature) OF REMARKS CON-**TAINERS** STA. NO. DATE TIME STATION LOCATION 1998 ST-1 ST-IA 2×40= 1420 ST-1B ST-1 1425 ST-ZA ST-Z 1445 VST-Z 5T-2B 1451 ST-3 ST-3A 1×11. NaDH HAZIZ 1520 ST-3 1520 ST-3A IXIL. ST-3A 1520 X/L. 157-3 6x40ml X ST-3 χ 1520 5T-3A NOOH PH >12 ON 9010 ANALYSIS ST-3 1525 ST-38 AXIL. 1525 ST-3B - ST-3 4×40ml X /1ST-3 1525 ST-33 * AS REQUESTED IN CONTRACT U/ 57-3 2X/LIT. 1530 5T-3C SOUND LABORATORY 1530 ST-3C IXLL 4x 40 me 1530 ST-3C 1800 1×4/Al Relinquished by: (Signature) Received by: (Signature) Date / Time Relinquished by: (Signature) Date / Time Received by: (Signature) 1200 FED-X Relinquished by: (Signature) Date / Time Received by: (Signature) Date / Time Received by: (Signature) Relinquished by: (Signature) Relinquished by: (Signature) Remarks Date / Time Received fon Laboratory by: Date / Time "FED-X B/L # 804733300967 (Sign Stuce) SINNO Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files  $\mathcal{O}$ 

Client:

Ecology & Environment, Inc.

Date: April 28, 1998

Project:

KJ9103 WDI Tank Assessment

Lab No.: 71868

#### **GASOLINE RANGE ORGANICS**

Samples 71868-1, 71868-4 through 71868-5, 71868-19 and 71868-21 (soils) and 71868-8, 71868-11, 71868-14, 71868-18, 71868-26, 71868-29 and 71868-32 (liquids) were analyzed for gasoline range organics in accordance with EPA Method 8015 Modified. The soil sample were extracted on 4-16-98 and analyzed on 4-17-98. The liquid samples were prepared on 4-16-98 and analyzed on 4-17-98.

Sample 71868-14 was received with a pH of 6. Sample 71868-18 was received with a pH of 5.

All quality control was within the acceptance limits.

Waters quant value x dilution factor

Soils

quant. Value x dilution factor x 10 x 40

sample weight x percent solids

#### **DIESEL RANGE ORGANICS**

Samples 71868-1, 71868-3 through 71868-5, 71868-19 and 71868-21 (soils) were analyzed for diesel range organics in accordance with EPA Method 8015 Modified. Several liquid samples were noted on the chain of custody for diesel range organic analysis. Insufficient sample volume was submitted for the liquid analysis and therefor canceled. The soil samples were extracted on 4-20-98 and analyzed on 4-21-98.

The contaminant present in samples 71868-1, 71868-4, 71868-5 and 71868-21 did not appear to be typical diesel range product. The elution pattern suggests that it may be heavy oil.

The contaminant present in sample 71868-3 did not appear to be typical diesel range product.

All quality control was within the acceptance limits.

Instrument reading x final volume x dilution factor sample weight or volume x dry weight

#### **TOTAL METALS**

Samples 71868-1 through 71868-5, and 71868-19 through 71868-22 (soils) and 71868-6, 71868-9, 71868-12, 71868-16, 71868-24, 71868-27 and 71868-30 (liquids) were analyzed for CA metals in accordance with EPA Methods 7470/7471/6010. The soil samples were digested on 4-9-98 and 4-13-98 and analyzed on 4-10-98 and 4-13-98. The liquid samples were digested and analyzed on 4-10-98.

The percent recoveries of antimony, lead and zinc in the matrix spike analyses of sample 71868-1 exceeded the control limits. The sample was reanalyzed with similar results. Matrix interference is indicated by the post digest spike percent recoveries.

## ANALYTICAL DATA REVIEW SUMMARY

Site Name:	WDI Tank Assessment
Location:	Santa Fe Springs, California
PAN No.:	0294-WDSF-XX
TDD No.:	09-9803-0006
Laboratory:	Sound Analytical Services, Inc.
Sampling Date:	April 6, 1998
Analytical Method:	8015M
Sample Matrix:	Soil

Sample No.	Sample I.D.	Laboratory I.D.				
I	ST-4A	71868-01				
2	ST-5	71868-03				
3	DW-1	71868-04				
4	BKG-1	71868-05				
5	ST-1A	71868-19				
6	ST-2A	71868-21				

Data Reviewer:	Trisha J. Woolslayer	Jesha J. Woolslayak	9/8/98
Chemist QA Reviewer:		0	
START PM Acceptance:			

## GC METHODS DATA VALIDATION WORKSHEET – SUMMARY

Report	t No.:	71868							
Labora	atory:	Sound Analytical Services, Inc. Trisha J. Woolslayer							
Review	ver:								
Review	v Date:	May 15, 1998							
Analyt	ical Method:	8015M	,						
No. of	Samples	Water:	Solid:	6	Other:				
1.	Holding Tim	es		Y					
2.	Surrogate Re	ecovery		Y					
3.	Matrix Spike	e/Spike Duplicate		Y	<del></del>				
4.	Blanks			Y					
5.	Initial Calibra	ation		$\overline{Y}$					
6.	Continuing C	Calibration		Y					
7.	Internal Stan	dards		Y					
<b>8</b> .	Compound I	dentification		Y	<del></del>				
9.	Compound C	Quantitation		Y					
10.	TIC Identific	ation		Y	- · · ·				
11.	System Perfo	ormance		Y	<del></del>				
12.	Overall Asse	essment		<u> </u>					
					s used were not reported ore, data was validated				
<u>based or</u>	n the raw data	package.	·						
	<del></del>								

### GC ORGANIC ANALYSES

### DATA PACKAGE COMPLETENESS CHECKLIST

Checklist Code:		* Included	: no problems : problems noted in review aded and/or Not Available				
		NR Not Req	uired				
	•	RS Provided	As Re-submission				
	•		•				
X	Case N	rrative					
Quality Co	ontrol Su	nmary Package					
-	X	_ Data Summary Sh	eets (Form I)				
	X	_ Surrogate Recove	ry Summary (Form II)				
	X	Matrix Spike/Spik	e Duplicate Recoveries (Form III)				
	$\overline{X}$	Method Blank Sur	Method Blank Summaries (Form IV)				
	N/A	Pesticide Evaluati	on Standards Summary (Form VIII)				
	N/A	Pesticide/ PCB St	andards Summary (Form VIIII)				
	N/A	Pesticide/ PCB Identification (Form X)					
Sample an	d Blank	ata Package Section					
_	X	Instrument Chrom	atograms *				
	X	Integration Result	s *				
	$\overline{X}$	Confirmation Ana	lysis Results				
	0	Copies of all Calc	ulations of Results				
	0	List of Instrument	Detection Limits				
	X	Chain-of-Custody					
	X	Sample Preparation	n and Analysis Run Logs				

^{*} Results for all samples, standards, blanks, MS/MSD and PE samples may be provided.

Other

T	H	$\boldsymbol{\Omega}$	n	IN	C	TI	MES
L	11	v	பப		U	111	41 L O

Acceptable	X	Outside QC Limits	
		•	

Samples were prepared and analyzed within applicable holding times, except as noted below. Generally, water samples have a holding time of 7 days (HCL preserved water samples may be held for 14 days prior to extraction). Soil, sludge and sediment samples have a holding time of 14 days. Water and soil extracts may be held for 40 days, in sealed amber vials at 4C prior to analysis. For those sample fractions prepared or analyzed outside of holding time requirements, results greater than the Method detection Limit (MDL) have been qualified as estimates ("J"). Results less than the MDL may be flagged as estimated ("UJ") or rejected ("R") based on the professional judgement of the data reviewer.

Comments:

## II. INSTRUMENT PERFORMANCE

A. Initial and	Continuing	Calibration		
Acceptable	X	Outside QC Limits		
the Response at or near the sesses a Perce Calibration Ventitation column	Factor(s) (Reported Ment Relative erification (Con) and $\leq 20$	Af) or standard curve. ethod Detection Limi Standard Deviation (9 CCV) results possess 0% (confirmation col	Verify that the love t (MDL). confirm (MRSD) <20%. Veright a Percent Different lumn, if applicable verified to the lower of the lower o	were used to construct vest concentrated ICS is n that the Mean Rf pos- rerify that all Continuing nce (%D) <15% (quan- le). All positive results re reported as estimates
Comments:				
No comments.				

II.	(CONT.)

B. Peak Resolution and Retention Time Stability

Acceptable X Outside QC Limits

The raw data was checked to verify that there was adequate resolution (R < 25%) between peaks of the standard compounds. Confirm that the laboratory has submitted valid Retention Time (RT) windows for all compounds of interest, including surrogates (Surr) and Internal Standards (IS), if applicable. Check the RT data and verify that all raw data (QC and samples) conforms to established RT windows. If a single sample RT shift was noted, was a post extraction spike of the same sample analyzed? If a consistent RT shift was observed in several samples, was the same RT shift observed in the MS/MSD? To confirm that the RT shift was matrix related, was a CCV standard successfully analyzed at the end of the analytical sequence?

Comments:

## III. METHOD PERFORMANCE

A. Laboratory	Control Sa	ample	
Acceptable	X	_ Outside QC Limits	
terest was succ acceptable meth %Recovery (%) the failed comp	essfully and perform R) of 85-1 ounds? If a	nalyzed at the beginning mance. If more that 20 15% of the true value, a LCS was not success	, containing all of the compounds of ing of the analytical sequence to confirm 0% of LCS compounds failed to meet a was a second LCS analyzed to re-check sfully analyzed (or re-analyzed), all posialified as estimates ("J").

Comments:

### III. (CONT.)

B. Surrogate(s) and Internal Standard(s)

If the method of Internal Standard (IS) analysis was utilized, verify that the IS recovery for each sample analyzed did not vary by more than a factor of 2 (i.e. <50% of >100%) compared to the average IS response from the initial calibration. Verify that all Surrogate (Surr) recoveries are within the acceptable laboratory control limits. If any IS or surrogate quality control criteria is not within control limits, sample data qualification is left to the professional judgement of the data reviewer.

Comments:

III.	(CONT.)			
C. E	C. Error Determination			
	X	Matrix Spike/Spike Duplicate Samples Analyzed		
		No Spike Samples Analyzed		

A Matrix Spike/Matrix Spike Duplicate (MS/MSD) pair may be analyzed to estimate bias or % Recovery (%Rec), and precision or Relative Percent Difference (RPD). The %Rec for the MS and MSD should not exceed the limits of 80-120% of the spiked concentration. The MS/MSD RPD should not exceed 20%. Sample results associated with poor MS/MSD data may be reported as estimates ("J") based on the reviewers professional judgement and the nature of the samples and analyte(s). NOTE: A low %Rec for the MS and MSD, and acceptable MS/MSD RPD may indicate an unavoidable matrix related error associated with the entire sample group. A duplicate LCS analyzed at the end of the analytical sequence may be used to confirm the existence of a matrix related error.

Comments:

	ble X Detection L	imits Adjusted
The follo	wing blanks were analyzed:	
X	Preparation Blanks	Field Blanks
X	Instrument Blanks	Rinsate Blanks
	Background Samples	Trip Blanks
prior to the sample based quent. Ver Limit (ID interfering fied as not be sample to the sample of th	the analysis of any samples. A particle or at a frequency of 5% (is erify that the instrument blank L) and the preparation blank page peak. All sample results less on-detect at an estimated detect.	and preparation blank was successfully analyzed perceparation blank was prepared and analyzed perceparation blank was prepared and analyzed perceparation blank was prepared and analyzed perceparation of any composition of any compound of than 5x the preparation blank results were qualification limit ("UJ"). The remaining blanks and and used to qualify data at the discretion of the

### V. COMPOUND IDENTIFICATION

Where applicable, verify that qualitative criteria for dual column confirmation analysis was met for all positive compound identifications. A dissimilar GC column and identical detector were used for the confirmation analysis (GC/MS analysis may also be used for confirmatory analysis, where applicable). If qualitative criteria were not met, all reported positive results for a sample or sample delivery group were qualified as presumptively present at an estimated quantity ("NJ").

Comments:

## VI. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

Verify that compound quantitation and detection limit reporting for both positive and non-detect samples were correctly adjusted to account for dilutions, extract concentration, splits, clean-up procedures, sample dry weight factors etc. All errors were reported to the laboratory for re-submission of the data.

Comments:

VII. PERFORMANCE EVALUATION SAMPL	VII.	PERFORMANCE	EVALUATION 9	SAMPLES
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Acceptable	Not Analyzed	X
Failed		

If a performance sample was submitted, were the laboratory reported recoveries within the documented limits? If 50%, or more of the performance sample compounds were outside of the established confidence limits or were misidentified, all sample results were rejected ("R"). If less than 50% of the performance sample compounds was outside of the established confidence limits or misidentified, qualification is left to the professional judgement of the data reviewer.

Comments:

### XII. OVERALL ASSESSMENT OF GENERAL ANALYTICAL DATA

On the basis of this review, the following determination has been made with regard to the overall data usability for the specified level.

Acceptable Rejected	Accepted with Qualification	
Accepted data	meet the minimum requirements for the following	ng EPA data category:
ERS Screenin	ng	
Non-definitiv	e with 10% Conformation by Definitive	
Methodology		
Definitive		X
Without Com	prehensive Statistical Error Determination	X
With Compre	ehensive Statistical error Determination	

Any qualifications to individual sample analysis results are detailed in the appropriate section above or appear under the comments section below. In cases where several QC criteria are out of specification, it may be appropriate to further qualify the data usability. The data reviewer must use professional judgment and express concerns and comments on the data validity for each specific data package.

#### Comments:

- The sample matrix and types of preservatives used were not reported on the chainof-custody.
- CLP summary forms were not provided. Therefore, data was validated based on the raw data package.

#### ANALYTICAL DATA REVIEW

### APPENDIX A

### DATA VALIDATION QUALIFIERS

The following list of data validation qualifiers may be used in this data review package:

J The associated numerical value is an estimated quantity because the reported concentrations were less than the required detection limits or because quality control criteria were not met. Presumptive evidence of presence of material. N Presumptive evidence of the presence of the material at an estimated quantity. NJ U The material was analyzed for, but not detected. The associated numerical value is the sample detection limit or adjusted sample detection limit. UJ The material was analyzed for, but not detected. The reported detection limit is estimated because quality control criteria were not met. The sample results are rejected (analyte may or may not be present) due to R. gross deficiencies in quality control criteria. Any reported value is unusable Recovery Not Determined (Optional). RND Precision Not Determined (Optional). **PND** 

#### ANNOTATED DATA SUMMARY SHEETS

Hand-annotated copies of the Data Summary Sheets from the analytical data package follow. When appropriate, detection limits have been adjusted to reflect effects of relevant qualifications noted during the data review. Errors in the reporting of detected compound results will usually not be changed by hand. In these cases, the laboratory may be required to re-submit portions of the data package and any affected Data summary Sheets. Any additional quality control failures have been flagged using the above listed data validation qualifiers.

Pages of Annotated Data summary Sheets follow.

**Client Name** 

Ecology & Environment, Inc.

Client ID: Lab ID: ST-4A 71868-01

Date Received:

71868-01 4/8/98

Date Prepared: Date Analyzed: 4/20/98

% Solids

4/21/98 83.54

### 💮 💮 🕾 Diesel Range Organics by Method 3550/8015 Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	<b>Low</b>	High
o-Terphenyl	121		50	150

Sample results are on a dry weight basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel Range Organics	650	30	X1

5/18/98

Client Name

Ecology & Environment, Inc.

Client ID:

ST-5

Lab ID:

71868-03 4/8/98

Date Received:

4/8/98 4/20/98

Date Prepared: Date Analyzed: % Solids

4/21/98 76.18

Diesel Range Organics by Method 3550/8015 Modified

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
o-Terphenyl	112		50	150

Sample results are on a dry weight basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel Range Organics	97	16	X2



**Client Name** 

Ecology & Environment, Inc.

Client ID:

DW-1

Lab ID:

71868-04

Date Received: Date Prepared:

4/8/98

Date Analyzed:

4/20/98 4/21/98

% Solids

78.68

### Diesel Range Organics by Method 3550/8015 Modified

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
o-Terphenyl	108	•	50	150

Sample results are on a dry weight basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel Range Organics	250	16	X1

5/18/98 Dw

Client Name

Ecology & Environment, Inc.

Client ID:

BKG-1

Lab ID:

71868-05

Date Received:

4/8/98

Date Prepared:

4/20/98

Date Analyzed:

4/21/98

% Solids

86.3

### Diesel Range Organics by Method 3550/8015 Modified

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
o-Terphenyl	95		50	150

Sample results are on a dry weight basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel Range Organics	23	14	X1



Client Name

Ecology & Environment, Inc.

Client ID:

ST-1A

Lab ID:

71868-19

Date Received:

4/8/98

Date Prepared:

4/20/98

Date Analyzed:

4/21/98

% Solids

88.45

### Diesel Range Organics by Method 3550/8015 Modified

				Recove	ery Limits
Surrogate	% Recovery	Flags	٠	Low	High
o-Terphenyl	98			50	150

Sample results are on a dry weight basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel Range Organics	ND	14	

5/18/98

Client Name

Ecology & Environment, Inc.

Client ID:

ST-2A

Lab ID:

71868-21

Date Received:

4/8/98

Date Prepared: Date Analyzed:

4/20/98

% Solids

4/21/98 87.95

### Diesel Range Organics by Method 3550/8015 Modified

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
o-Terphenyl	71		50	150

Sample results are on a dry weight basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel Range Organics	220	28	X1

5/18/98 DW CHAIN OF CUSTODY RECORD

75 Hawthorne Street
San Francisco, California 94105

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75 Hawthorne Street San Francisco, California 94105

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75 Hawthorne Street
San Francisco, California 94105

CHAIN OF CUSTODY RECORD

PROJ. NO. PROJECT NAME KJ9103 WDI TANK ASSESSMENT NO. SAMPLERS: (Signature) OF **REMARKS** CON-**TAINERS** TIME STA. NO. DATE STATION LOCATION 1998 ST-1420 ST-IA ST-1B ST-1 147.5 ST-ZA 1445 5T-7-B 1451 X NaDH +H>12 ST-3A ST-3 1520 1520 ST-3A 1520 ST-3A 57-3 ST-3 6×40ml EX 1520 5T-3A NooH PH)12 ON 9010 ANALYSIS 57-3 1525 5T-3B AXIL. 1525 ST-3B ST-3 1×11-4x40ml X ST-33 1525 1ST-3 * AS REQUESTED IN CONTRACT W/ 2XILIT. 5T-3C 1530 SOUND LABORATORY 1530 ST-3C 4x 40 ml X ST-3C 1530 1800 1×40All 🔆 Relinquished by: (Signature) Date / Time Received by: (Signature) Date / Time Relinquished by: (Signature) Received by: (Signature) 1200 Relinquished by: (Signature) Date / Time Date / Time Received by: (Signature) Relinquished by: (Signature) Received by: (Signature) Relinquished by: (Signature) Date / Time Date / Time Received for Laboratory by: "FED-X B/L # 804733300967 (Sign Stuce) -Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files 9

Client:

Ecology & Environment, Inc.

Date: April 28, 1998

Project:

KJ9103 WDI Tank Assessment

Lab No.: 71868

#### **GASOLINE RANGE ORGANICS**

Samples 71868-1, 71868-4 through 71868-5, 71868-19 and 71868-21 (soils) and 71868-8, 71868-11, 71868-14, 71868-18, 71868-26, 71868-29 and 71868-32 (liquids) were analyzed for gasoline range organics in accordance with EPA Method 8015 Modified. The soil sample were extracted on 4-16-98 and analyzed on 4-17-98. The liquid samples were prepared on 4-16-98 and analyzed on 4-17-98.

Sample 71868-14 was received with a pH of 6. Sample 71868-18 was received with a pH of 5.

All quality control was within the acceptance limits.

Waters quant value x dilution factor

Soils

quant. Value x dilution factor x 10 x 40

sample weight x percent solids

#### **DIESEL RANGE ORGANICS**

Samples 71868-1, 71868-3 through 71868-5, 71868-19 and 71868-21 (soils) were analyzed for diesel range organics in accordance with EPA Method 8015 Modified. Several liquid samples were noted on the chain of custody for diesel range organic analysis. Insufficient sample volume was submitted for the liquid analysis and therefor canceled. The soil samples were extracted on 4-20-98 and analyzed on 4-21-98.

The contaminant present in samples 71868-1, 71868-4, 71868-5 and 71868-21 did not appear to be typical diesel range product. The elution pattern suggests that it may be heavy oil.

The contaminant present in sample 71868-3 did not appear to be typical diesel range product.

All quality control was within the acceptance limits.

Instrument reading x final volume x dilution factor sample weight or volume x dry weight

#### **TOTAL METALS**

Samples 71868-1 through 71868-5, and 71868-19 through 71868-22 (soils) and 71868-6, 71868-9, 71868-12, 71868-16, 71868-24, 71868-27 and 71868-30 (liquids) were analyzed for CA metals in accordance with EPA Methods 7470/7471/6010. The soil samples were digested on 4-9-98 and 4-13-98 and analyzed on 4-10-98 and 4-13-98. The liquid samples were digested and analyzed on 4-10-98.

The percent recoveries of antimony, lead and zinc in the matrix spike analyses of sample 71868-1 exceeded the control limits. The sample was reanalyzed with similar results. Matrix interference is indicated by the post digest spike percent recoveries.